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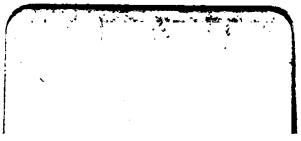

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TRANSACTIONS

—OF THE—

Iowa State Medical Society,

FOR THE YEAR 1895.

HELD AT

CRESTON, APRIL 17, 18 AND 19.

VOLUME XIII.

PUBLISHED BY THE SOCIETY.

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PROCEEDINGS OF THE FORTY-FOURTH
ANNUAL SESSION

OF THE

IOWA STATE MEDICAL SOCIETY

HELD AT CRESTON,
APRIL 17TH, 18TH, AND 19TH, 1895.

FIRST DAY, WEDNESDAY, APRIL 17th.

MORNING SESSION.

The Society convened in the Odd Fellows Hall and was called to order at 10 o'clock by First Vice-President Dr. D. S. Fairchild, of Clinton.

Officers present: First Vice-President, D. S. Fairchild, Clinton; Second Vice-President, T. J. Maxwell, Keokuk; Secretary, J. W. Cokenower, Des Moines; Assistant Secretary, F. E. Sampson, Creston; Treasurer, G. R. Skinner, Cedar Rapids.

Opening prayer by Reverend Robert E. Swartz, of Creston.

Address of welcome by Mayor J. M. Scurr, Creston. He said:

Gentlemen of the State Medical Society — Our city most cordially greets you. She extends to you a welcome that in warmth and sincerity has been surpassed by none of the cities that in the past have had the honor of entertaining you.

While you have met in larger cities, cities of more magnificent homes, larger business buildings, greater wealth and commercial importance, and in more prosperous times; while you are accustomed to meet in our beautiful capital city, yet we assure you that our hospitality is not to be measured by our size, and Creston, feeling herself honored in being your entertainer, gives you a warm welcome from her whole people. She recognizes in your body not only a meeting of men of superior scholastic attainments, men recognized as authority on our most intricate scientific questions, but a nearer representation of every phase and station of life in our fair state, as observed by you in the daily discharge of duty, than any other assembly of men that could come together.

The physician is with us all and always. No home or individual is so high as to be beyond the necessity of his attendance and none so low but at the call of suffering and disease the response and assistance is

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as ready. It is not a financial consideration that prompts this impartial and unfailing conscientious discharge of duty; it cannot be the dollars attached to a visit that rouses a doctor from his rest at night and impels him, through the discomforts of cold, storm and unseasonable hours, to the bedside of suffering and the alleviation of pain, but it is the manhood in the man, the sympathy for and desire to palliate the ills of his fellow being.

The physician must of necessity be a man worthy of the highest confidence. To him is intrusted the very heart secrets of the household; to him the mother brings the life of her little child, more precious to her than her own, and with no knowledge of the agents used, no knowledge of their action or effect, she places its destiny in his keeping and administers unknown medicines, and follows directions whose meanings are frequently to her obscure, with implicit confidence that if it is possible its health and strength will be restored.

To the physicians are as confidently brought the ills and sudden physical disasters of mature life for correction. Old age with tottering footsteps, dimming eye and failing energies, pins its faith to its physician and its God in prolonging an already matured life.

You greet us on our advent into the world. You minister to our various ills and whims as we pass through it. You alleviate our pains, soothe and comfort us in our old age, and finally close our eyes in death.

While we are proud of our home physicians, we cannot claim them exclusively as our own, for their usefulness and their reputation as being eminently skillful are not confined to our city alone, but are recognized throughout the state, and yet our state is filled with good physicians.

This convention, this exchange of ideas and experiences, must of necessity result in good to you and through you to the whole state.

In welcoming you and extending to you the freedom of the city I place you in the hands of our local physicians and assure you you will find them most royal entertainers.

Address in behalf of the local profession, by Dr. H. E. W. Barnes, Creston. He said:

It is a pleasurable part that has fallen to me to welcome the Iowa State Medical Society, in behalf of the local profession, to the place of charming homes, enterprising men and handsome women, the gem of the summit, the metropolis of the Blue Grass region of Iowa, the hospitable city of Creston.

And we are highly gratified to be favored by the presence of the distinguished medical and surgical ladies and gentlemen who thus today so signally honor us.

The Iowa State Medical Society is composed of the thinking, working, broad, unselfish and progressive members of the medical profession

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of this great commonwealth, open to receive all truth. "Wherever found, on heathen or on Christian ground," too broad, too deep and too investigating to be hampered by any iron-clad medical "creed," "ism" or "pathy," "with malice toward none and with charity for all," striving to keep in touch with the master minds, the glorious "fragment" that, torch in hand forever leads the "unsound majority," whose genius robbed the operating table and the obstetrical "chamber of horrors" of its pain by giving to the world the blessed anæsthesia.

To the men who have invaded the realm of the microbe with the effective germicide, and thus permit the wound to heal unvexed; to the men who have almost rid the world of small-pox pestilence, lessened the death rate of infectious and contagious disease and successfully invaded every region of the human body; ever ready at the call of duty, and trained to confront danger with fortitude and to meet peril with composure and presence of mind; foregoing all bodily ease and comfort to administer to the sick; called out in the terrific fury of the raging midnight tempest, facing the howling, blinding, merciless Arctic blizzard, on nights of which "Tam O'Shanter" never dreamed; with "cheer for the living and tears for the dead;" standing, like the Roman sentinel at Pompeii, where "Woe treads the heel of woe they come so fast," the battle ever on, the victory never won (and yet amidst the thorns and brambles, fragrant flowers of beauty redolent of spring are found by him who sees aright); and to those whose work appears a desert drear, of drifting yellow sand, where mocking ambition forever paints the false mirage, dissolving views of fame, and place, and power, that fade before his path a phantom brood, this meeting is an oasis, where genial palms and cool refreshing springs will rest and refresh until he is away again.

And so we greet you, each and every one, trusting that when to your last call you cheerfully respond you all may be

> Of those immortal dead who live again,
> In minds made better by their presence.
> Live in pulses stirred by generosity,
> In deeds of daring rectitude.
> In scorn for miserable aims that end with self,
> In thoughts sublime that pierce the night like stars,
> And with their mild persistence urge man's search
> To vaster issues.

On motion the reading of minutes of last annual meeting was dispensed with.

The Committee on Arrangements announced during the session the following delegate members: Drs. T. W. Mulhern, Greenfield; Walter L. Bierring, Iowa City; Charles W. Stewart, Washington; T. C. Cole, Thurman; D. Graves, Gilman; C. W. McGavren, Missouri Valley; John A. Gibbons, Keokuk; B. N. Torrey, Creston; J. E. Howe, Greenfield; J. A. Rawls, Creston; A. J. Mauran, Creston; L. S. Groves,

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Creston; Arthur I. Groves, Creston; H. L. Cokenower, Clarinda; E. T. Farrens, Clarinda; W. S. Grimes, Wapello; H. G. Lynch, Arbor Hill; J. W. Holland, Osceola; J. W. Lander, Afton; H. M. Korten, Kent; R. C. Grigg, Murray; M. L. Hooper, Milo; J. F. Herrick, Ottumwa; Roger N. Cresap, Bonaparte; J. P. Scroggs, Lenox; Chas. H. James, Centerville; C. H. Bryant, Corning; A. Kessler, Carroll; J.W. Coakley, Mt. Etna; J. E. Conn, Ida Grove; Carl E. Conn, Battle Creek; F. M. Powell, Glenwood; Ed C. Ayres, Lorimer; M. N. McNaughton, Valisca; A. L. Olive, Corning; A. Weaver, Cumberland; F. P. Culverson, Greenfield; F. E. L. Hester, Glenwood; C. H. DeWitt, Glenwood; A. A. Ashby, Red Oak; D. Macrae, Jr., Council Bluffs; V. L. Treynor, Council Bluffs; J. C. Waterman, Council Bluffs; W. L. Bogan, Hamburg; E. T. Campbell, Tabor; W. D. Christy, Shannon City; A. E. King, Blockton; W. Fordyce, Fairfield; Ed Embree, Winterset; C. M. Paschal, Bedford; Frank C. Hoyt, Clarinda; H. E. Eschbaugh, Albia; F. W. Bennett, Lenox; J. F. Hasty, Murray; R. R. Chapman, Bridgewater; R. H. Gregory, Nevinsville; N. K. Garfield, Algona; R. D. Mason, Missouri Valley; R. N. Teeby, Corning; F. E. Potter, Corning; A. W. Sherman, Lamoni; H. C. Bone, Grand River; B. R. McAllastar, Lamoni; A. J. Scofield, Macksburg; Frederick O. Jackman, Mt. Pleasant; Burdette D. LaForce, Ottumwa; M. F. Brown, Lenox.

And the following members by invitation: Drs. J. E Summers, Jr., Omaha, Neb.; F. S. Owens, Omaha, Neb.; John H. Van Eman, Kansas City, Mo.; W. J. Van Eman, Leavenworth, Kan.; Emory Lanphear, St. Louis, Mo.; W. R. Bolibaugh, Osceola, Iowa; W. L. Carver, Murray, Iowa; F. E. Vest, Montezuma, Iowa; T. M. Throckmorton, Chariton, Iowa; H. L. Sweet, Mt. Etna, Iowa; N. S. Johnson, Corning, Iowa; F. P. Amdur, Carbon; James Widner, Corning, Iowa; W. E. Messenger, Prescott, Iowa; W. H. Christie, Omaha, Neb.; C. C. Allison, Omaha, Neb.; J. P. Lord, Omaha, Neb.; James Ethridge, Chicago.

Dr. F. E. V. Shore, Des Moines, preferred charges against Dr. A. R. Amos, of Des Moines. Referred to Committee on Ethics.

There being two members of the Committee on Ethics absent, the Chair appointed to fill such vacancies, D. Macrae, Council Bluffs, and G. F. Jenkins, Keokuk.

D. Macrae offered the following amendment to the constitution, viz.: "That the last sentence of section 2, article II, be stricken out, viz.: 'The professional staff of the state insane, deaf and dumb and blind asylums shall each be entitled to one delegate.'"

Moved that a shorthand reporter be employed to report the proceedings of this session and that he be allowed $50 for same, $25 thereof to be paid at the end of the session and balance when transcript completed. Carried.

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The President being absent, his address was referred to Committee on Publication and a special committee consisting of Drs. Schooler, Des Moines; F. M. Hiett, Red Oak, and J. M. Emmert, Atlantic.

Practice of Medicine.

Report—F. M. Hiett. Referred.

Papers—"The Physician," by M. F. Stults, Wiota. Read by W. Hutchinson, Des Moines. Referred.

"Diphtheria—Modern Treatment," by Walter L. Bierring, Iowa City, with demonstrations of method of preparing antitoxin. Read and referred.

"On Diphtheria," by F. W. Porterfield, Atlantic. Read and referred.

AFTERNOON SESSION—2 P. M.

Meeting called to order by First Vice-President.

The majority and minority reports on Polk county ethical question presented and referred to Committee on Ethics.

The papers read at the forenoon session were discussed by the following: J. R. Claybaugh, Creston; H. L. Getz, Marshalltown; A. G. Field, Des Moines; G. W. Barr, Keokuk; L. B. Powell, Albia; W. Hutchinson, Des Moines; W. D. Middleton, Davenport; J. M. Emmert, Atlantic. Discussion closed by authors, and papers referred.

"Diphtheria and Membraneous Croup: Their Classification," by A. A. Rawson, Corning. Read, received, and discussed by E. E. Dunkelberg, Tripoli; J. Roberts, Osceola; J. M. Emmert; H. L. Getz; F. W. Porterfield; E. Hornibrook, Cherokee. Discussion closed by author, and paper referred.

H. L. Getz presented the following resolution:

Resolved, That it is the sense of this Society that all cases of so-called Membraneous Croup should invariably be quarantined the same as typical diphtheria, and that the term Membraneous Croup, in the opinion of this Society, should everywhere and under all circumstances be abolished. Lost.

Then the following resolution was offered and passed:

WHEREAS, the subject of the necessity of quarantine being established in the so-called Membraneous Croup has been brought up and unfortunately disposed of negatively, and,

WHEREAS, this Society may be misunderstood by the public on the question; therefore, be it

Resolved, by the Society, that we endorse the wise precaution of the State Board of Health in including this affection in the list of contagious diseases.

E. Luther Stevens, of Des Moines, made the following motion: "That a committee of three members be appointed by the Chair to present a memorial to the Board of Regents at Iowa State University to ask an appropriation for the purpose of enabling an ample supply of

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antitoxin of diphtheria to be made at the State University for the use of the medical profession of the state." Lost.

"Intubation," by D. W. Smouse, Des Moines. Read, received, and discussed by A. A. Rawson, Corning; J. T. Priestly, Des Moines; Woods Hutchison. Discussion closed by author, and paper referred.

"The General Practitioner," by R. Hanna, Red Oak. Read, received and referred.

"The General Practitioner," by L. B. Powell, Albia. Read, received and paper referred.

"Treatment of Pneumonia," by P. J. Farnsworth, Clinton. Read by title and referred.

"Pneumonia of the Aged," by Geo. F. Jenkins, Keokuk. Read, received, and discussed by D. W. Finlayson; E. Hornibrook; Dr. Cresap, Bonaparte, and E. E. Dunkelberg, Tripoli. Discussion closed by author, and paper referred.

"Treatment of Epilepsy," by T. P. Stanton, Chariton. Read, received, and discussed by Emory Lanphear, St. Louis. Referred.

On motion the section on Nervous Diseases was made the special order for 2:30 P. M. Thursday.

EVENING SESSION — 7:30 P. M.

Meeting called to order by First Vice-President.

The report of the Committee on Publication was received and adopted, with the following suggestions:

1. That all papers placed in the hands of the Publication Committee should have a title page, with the name of the author.

2. That the manuscript be type-written.

3. That the manuscript be paged, punctuated, and written on one side of paper only.

Dr. H. B. Young, Burlington, offered the following amendment to the constitution: "Article IX (4th paragraph). The following Standing Committees, one member each, shall be appointed by the President:

"Committee on Medicine.

"Committee on Surgery.

"Committee on Obstetrics.

"With sub-committees, as follows:

"To Medicine: 1. Materia Medica. 2. Hygiene. 3. State Medicine. 4. Mind and Nervous Diseases.

"To Surgery: 1. Ophthalmology. 2. Otology and Laryngology.

"To Obstetrics: 1. Gynæcology.

"Their duties shall be to receive all papers contributed to the Society on subjects connected with their respective chairs; and before any paper is read it shall have the recommendation of the committee and the Committee of Arrangements notified. These committees

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shall, also, in conjunction with the Committee of Arrangements, make up the program of section work for each meeting, giving priority to the sections by rotation."

Committee on Ethics made the following report, which was adopted:

"Your committee would report that, in the matter of the charges against C. J. Lukens, of Oskaloosa, there being nothing before your committee in the shape of evidence, no action is recommended. The committee recommends no action in the controversy between G. H. Eiskamp and the Washington County Medical Society. In the matter of the charges against A. R. Amos, of Des Moines, the committee recommends reference back to the Polk County Medical Society for investigation in the usual manner prescribed by the constitution and by-laws. In the matter of the communication of the majority and minority report concerning the conduct of the members of the Polk County Medical Society, the committee holds the report under seal of the Polk County Medical Society, which is as follows:

DES MOINES, Iowa, December 5, 1894.

To the Officers and Members of the Iowa Medical Society: In reply to a communication from your secretary, Dr. J. W. Cokenower, a copy of which is affixed hereto, permit me to say that the communication was read at a regular meeting of the Society in October. After a great deal of discussion, during which the following facts were established: That a specific charge of violation of the Code of Ethics did not exist against any member of the Polk County Medical Society. That it was the opinion of most of the members of the Society that it was not expedient, and probably beyond the power of this Society, to undertake the investigation of charges of such a general character.

The following resolution was adopted: That

WHEREAS, a charge bearing upon the ethical standard of the members of this Society, openly made in the session at the State Medical Society, has been referred to us for action by the State Society, be it

Resolved, That this Society frankly recognizes that the action of some of its members have, in the past, fallen below the standard of the Code, and expresses its regret for the same, and pledges itself to amendment in the future.

[Signed.] J. B. HATTON,
C. E. STONER,
President and Secretary Polk County Medical Society.

"And while no additional nor specific allegations have been presented us, the committee would recommend that the Polk County Medical Society be advised that the profession of the state view with regret the evident toleration of irregular and unprofessional conduct upon the part of its members, yet, in view of the frank disclaimer and promises of amendment on the part of said Polk County Medical Society, there appears no further cause of action in this connection. Your committee desires to state that their finding was arrived at without the co-operation of the Chairman, L. Schooler, who requested to be and was excused from service during its consideration.

H. B. YOUNG,
Secretary Committee on Ethics.

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"Myxœdema and Treatment by Thyroid Gland," by T. J. Maxwell, Keokuk. Read, received, and discussed by F. M. Hiett, W. Hutchinson. Discussion closed by author, and paper referred.

The following papers were read by title and referred:

"Diphtheria," by J. P. Claybaugh, Creston.

"Scarlet Fever," by A. B. Bowen, Maquoketa.

"The Antiseptic Factor in the Treatment of the Acute General Infections," by J. Chris Lange, Pittsburg, Pa.

"Two Cases of Diphtheria," by S. A. Spilman, Ottumwa.

"The General Practice of Medicine," by C. B. Powell, Albia.

"The Patricians and Plebians of our Profession," by C. F. Wahrer, Fort Madison.

Section on Surgery.

Report — By J. M. Emmert. Read, received, and discussed by D. W. Crouse, Waterloo; D. Macrae; J. W. Kime, Fort Dodge; Emory Lanphear; J. E. Summers, Omaha, Neb.; D. Macrae, Jr.; T. J. Maxwell, Keokuk; F. W. Porterfield; John Van Eman; W. H. Christie; W. Hutchinson; H. L. Getz. Discussion closed by author, and paper referred.

SECOND DAY, THURSDAY, APRIL 18th.

MORNING SESSION — 9 A. M.

Meeting called to order by First Vice-President.

Section on Surgery — Continued.

"Operative Treatment of Hernia," by Lewis Schooler.

"Basseni Operation for Hernia," by D. W. Middleton. Discussed by J. W. Kime, followed by C. C. Allison, Woods Hutchinson, T. J. Maxwell, D. W. Finlayson. Discussion closed by authors, and papers referred.

"Stricture of the Rectum," by C. E. Ruth, of Keokuk.

"Management of Tubercular Fistula," by C. C. Allison.

"So-called Neuralgia of Rectum," by D. W. Finlayson.

Discussion opened by T. J. Maxwell, followed by J. E. Summers; L. Schooler; D. C. Brockman, Oskaloosa; W. D. Middleton; E. Hornibrook. Discussion closed by authors, and papers referred.

"Pathology of Fracture of Long Bones," by D. S. Fairchild.

(B. N. Torrey, of Creston, presented Patella Inclined Splint.)

"Treatment of Injury to Long Bones," by D. Macrae, Jr.

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AFTERNOON SESSION — 2 P. M.

Called to order by First Vice-President.

Section on Surgery — Continued.

Discussion opened by H. E. W. Barnes, followed by C. P. Lord, of Omaha; E. Hornibrook, D. Macrae, and others.

Section on Nervous Diseases.

"History of Insanity," by F. S. Thomas, Council Bluffs.

"Insanity, Signs of Border Line," H. A. Gilman, Mt. Pleasant. Read by title.

"Course and Diagnosis of Insanity," by F. C. Hoyt, Clarinda.

"Prognosis in Insanity," by G. H. Hill, Independence.

"Treatment of Insanity," by E. Hornibrook, Cherokee.

All the papers read were discussed by several present, and referred.

Section on Obstetrics and Gynæcology.

Report—By H. L. Getz, Marshalltown.

The following papers were read and referred:

"Endometritis," by John Van Eman. Discussed by D. C. Brockman, J. M. Emmert, L. Schooler, F. B. Dorsey, F. M. Hiett, J. T. Priestley. Discussion closed by author, and paper referred.

"Repair of Injuries to Pelvic Floor," by F. B. Dorsey. Referred.

"Report of Selected Cases," by J. H. Ethridge, Chicago. Discussed by J. E. Summers, Omaha. Discussion closed by author, and paper referred.

"Obstructed Labor, Occlusion of Vagina by a Stricture," by A. A. Rawson, Corning. Discussed by H. L. Getz. Discussion closed by author, and paper referred.

"Anæsthetics in Obstetrical Practice," by F. H. Boucher, Marshalltown. Read by title and referred.

Report of Committee on Nominations.

Mr. President: We, your Committee on Nomination, beg leave to submit the following report:

President—D. S. Fairchild, Clinton.

First Vice-President—F. S. Thomas, Council Bluffs.

Second Vice-President—H. E. W. Barnes, Creston.

Treasurer—G. R. Skinner, Cedar Rapids.

Secretary—J. W. Cokenower, Des Moines.

Assistant Secretary—E. Luther Stevens, Des Moines.

Trustee—W. D. Middleton, Davenport.

Committees.

Finance—D. Macrae, Chairman, Council Bluffs; E. E. Overfield Elma; W. F. Graham, Atlantic.

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Arrangements—J. T. Priestley, Chairman, Des Moines; F. E. V. Shore, Des Moines; Albert Hull, Des Moines; C. E. Stoner, Des Moines; E. E. Dorr, Des Moines.

Publication—F. S. Thomas, Chairman, Council Bluffs; Woods Hutchinson, Iowa City; F. J. Will, Eagle Grove, and J. W. Kime, Fort Dodge.

Ethics—A. L. Wright, Chairman, Carroll; D. Macrae, Council Bluffs; L. Schooler, Des Moines; H. B. Young, Burlington; C. M. Hobby, Iowa City.

Legislation—W. C. Pipino, Chairman, Des Moines; W. D. Middleton, Davenport; A. W. McClure, Mt. Pleasant; A. L. Wright, Carroll; Ira L. Welch, Humboldt.

Necrology—First district, J. C. Hughes, Keokuk; Second district, E. F. Clapp, Iowa City; Third district, C. S. Chase, Waterloo; Fourth district, E. E. Overfield, Elma; Fifth district, J. S. Love, Springville; Sixth district, J. R. Gorrell, Newton; Seventh district, J. F. Kennedy; Eighth district, T. P. Stanton, Chariton; Ninth district; R. Hanna, Red Oak; Tenth district, O. E. Evans, Gowrie; Eleventh district, J. H. Talboy, Sioux City.

Delegates Elected to American Medical Association at Balitmore, Md.—F. E. Sampson, J. C. Hughes, J.T. Priestley, D.W. Smouse, W. C. Pipino, Lewis Schooler, G. R. Skinner, J. S. Love, W. Jepson, D. S. Fairchild, F. J. Will, J. C. Shrader, D. W. Crouse, Woods Hutchinson, J. W. Cokenower, A. G. Field, J. M. Emmert, Geo. F. Jenkins, H. L. Getz, W. D. Middleton, C. E. Conn, F. B. Dorsey, T. J. Maxwell, M. J. Duncan, Frank C. Hull, C. E Stoner, G. C. Stockman, Mrs. A. E. Portman, A. M. Vail, F. O. Jackman, F. M. Hiett, H. E. W. Barnes, A. L. Wright, Ira L. Welch, C. M. Hobby, E. F. Clapp, E. E. Overfield, J. R. Gorrell, J. H. Talboy, W. F. Graham, D. C. Brockman, R. E. Conniff, A. A. Deering, Ed. E. Dorr, H. C. Eschbaugh, C. I. Burt, W. B. LaForce, W. O. Richards, H. B. Young, William Watson, W. Van Werden, H. L. Cokenower, F. S. Thomas, Samuel Bailey, Geo. P. Hanawalt, T. F. Kelleher, A. B. Bowen.

Resolved, That the Secretary be instructed to issue certificates to those desiring to attend the meeting of the American Medical Association, at Baltimore, in the ratio of five to each Congressional District.

Next place of meeting, Des Moines, Iowa.

J. W. KIME, *Secretary.*

Report adopted and officers elected as reported.

On motion the Chair was authorized to fill vacancies *pro tem.* by appointment of Committees on Publication and Finance.

Appointed the following:

On Publication—H. L. Getz, Marshalltown, W. C. Pipino, Des Moines.

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On Finance—F. M. Hiett, Red Oak; J. C. Hughes, Keokuk; W. S. Grimes, Wapello.

It was moved to make a special order the report of Committee on Legislation immediately on convening at the evening session. Carried.

Report of section Materia Medica made a special order for evening session after Ophthalmology and Otology.

Adjourned to 7:30 P. M.

EVENING SESSION—7:30 P. M.

Called to order by First Vice-President.

Report of Committee on Legislation presented by W. C. Pipino, and received, as follows:

Your Committee on Medical Legislation beg to make the following report: We have two bills to present—One, the present law revised with corrections and additions as suggested by the State Medical Examiners and Attorney-General Stone. The other a bill drafted by the Code Commission with comments by members of the State Board of Medical Examiners. To properly understand the value of the bills as presented, necessitates a careful reading and, if the Society so desire, they will now be read. Same were read to the Society as follows:

A BILL

FOR AN ACT to Amend Chapter 104, Acts of the Twenty-first General Assembly, relating to the Practice of Medicine and Surgery in the State of Iowa:

Be it Enacted by the General Assembly of the State of Iowa:

SECTION 1. That chapter 104, Acts of the Twenty-first General Assembly, be and the same hereby is amended as follows, to-wit: That wherever in said chapter the word "examiners" occurs it shall be preceded by the word "medical."

SEC. 2. That section 1 of said act be amended by striking out the following words, beginning in line sixteen and ending in line twenty, to-wit: "Unless he or she should have been in continuous practice in this state for a period of not less than five years, of which he or she shall present to the State Board of Examiners satisfactory evidence in the form of affidavits."

SEC. 3. That section 2 of said act be amended by striking out the following words, beginning in line nine and ending in line eleven, to-wit: "Persons who have practiced medicine or surgery in any of its departments for five years as provided in this act," and inserting in lieu thereof the following words, to-wit: "Midwifes who furnish satisfactory evidence of having graduated from colleges of midwifery recognized by the Board of Medical Examiners as in good standing."

SEC. 4. That section 3 of said act be amended by striking out of line eleven the word "two" and inserting instead thereof the word "five."

SEC. 5. That section 5 of said act be amended by striking out of the eighth line the following words, to-wit: "or because of five years' practice in the state."

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SEC. 6. That section 6 of said act be amended by striking out the word "ten" in line two, and inserting in lieu thereof the words "twenty-five"; also by inserting after the word "will," in line six, the following words, to-wit: "Defray the necessary contingent expenses of the Secretary's office, and"; also by striking out all the words following the word "fee," in line eighteen, to-wit: "*Provided*, that any applicant for examination by notice in writing to the secretary shall be entitled to an examination within three months of the time of said notice, and a failure to give such opportunity shall entitle such applicant to practice, without the certificate required by this act, until the next regular meeting of said board."

SEC. 7. That section 7 be and hereby is repealed, and the following enacted in lieu thereof:

"SEC. 7. The State Board of Medical Examiners may refuse to grant a certificate to any of the following persons: (1) One who is not a resident of this state; (2) one who has been convicted of felony; (3) one who is incompetent; (4) one who has been guilty of gross immorality; (5) one who is guilty of habitual drunkenness, or whose habit of strong drink renders him an unsafe practitioner. The board may revoke a certificate already issued to any person for any of the foregoing recited causes, and may revoke a certificate already issued to either of the following persons: (1) One who has been guilty of making false statements in the application for a certificate; (2) one who has removed from the state; (3) one who is guilty of unprofessional conduct in his relations to his patients; (4) one who wilfully neglects or refuses to report such vital statistics as are now or may be hereafter required by law. Physicians residing upon the border of this state and whose practice extends habitually into this state may be regarded as residing within this state. A refusal or revocation of a certificate can only be made with the affirmative vote of at least five physicians of the State Board of Medical Examiners, in which number shall be included one or more members of the different schools of medicine represented on the board.

"The standing of a legally chartered medical college from which a diploma may be presented shall not be questioned except by a like vote. All persons who shall be so refused a certificate, or whose certificate shall be so revoked, are hereby prohibited from practicing medicine, surgery, or obstetrics, in this state thereafter, so long as such refusal or order of revocation shall remain in force. All charges against a certificate holder shall be in writing, in the form of a petition, with the state of Iowa as plaintiff, specifying particularly the matter complained of, and verified and sworn to by the relator or person presenting the same. If, in the opinion of the board, the charge ought to be heard, the Secretary of the board shall cause twenty days' notice of the time and place of hearing to be served upon the respondent, together with a copy of the petition. The respondent may file his sworn answer to the petition with the Secretary of the board, and a full and fair hearing shall be given the party of all the matters at issue. The President and Secretary of the board are hereby empowered to administer the necessary oaths to witnesses, and after such hearing the board shall render, and enter of record, its judgment and decision, which shall be final. But the board may afterward, upon good cause shown, set aside such judgment, if it be against the respondent, if the board be satisfied that justice and safety to the public warrant such action."

SEC. 8. That section 8 of said act be and the same is hereby repealed, and the following enacted in lieu thereof, to-wit:

"SEC. 8. Any person shall be deemed as practicing medicine or surgery, or to be a physician within the meaning of this act, who shall, by writing or printing, or by any other method, either by himself or by any agent or employé, profess or attempt to cure or treat any dis-

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ease or deformity, whether real, alleged or imaginary, by any drug, nostrum, manipulation, or any expedient, medicinal, mechanical, metaphysical, or otherwise; but nothing in this act shall be construed to prohibit gratuitous service in case of emergency, nor to prevent the keeping, advertising, or sale of patent or proprietary medicines, nor to prevent the advertising, selling or prescribing of natural mineral waters flowing from wells or springs, nor to surgeons in the United States army, navy, or hospital marine service, nor to physicians of other states who may be called in professional consultation with physicians residing within this state."

SEC. 9. That section 11 of said act be and the same is hereby repealed, and the following enacted in lieu thereof, to-wit:

"SEC. 9. Every itinerant physician who shall, by writing or printing, or by any other method, either by himself or by any agent or employé, profess or attempt to cure or treat disease or deformity, whether real, alleged or imaginary, by any drug, nostrum, manipulation, mechanical, metaphysical, or otherwise, shall pay a license of $50 per month, or fraction thereof, into the treasury of the Board of Medical Examiners, to be collected by the Secretary in the name of the state of Iowa; and it shall be lawful for said board to issue, upon proper application, such license, to be signed by the President of the board, attested by the Secretary thereof with the seal of the board. The Board of Medical Examiners may for sufficient reason refuse such license.

"Any itinerant physician who shall in any manner profess to cure or treat disease or deformity by any means whatsoever, without having first procured a license as specified in this section, shall, if found guilty, be fined in any sum not less than one hundred dollars and not exceeding two hundred dollars for each offense, to be recovered before any court of competent jurisdiction. All prosecutions under this section shall be conducted by the county attorney, who is hereby authorized, in case of recovery, to retain as a special fee for each case tried the sum of ten dollars out of the fines thus collected, the balance to be disposed of as provided in section 6. The term "itinerant vender" in section 10, chapter 75, acts of the Eighteenth General Assembly, shall not apply to persons holding certificates under this act."

SEC. 10. That chapter 66, acts of the Twenty-second General Assembly be, and the same is, hereby repealed.

SEC. 11. That "section 12" be so amended as to read "section 13."

SEC. 12. This act being deemed of immediate importance, shall take effect and be in force from and after its publication in the *Iowa State Register* and the *Des Moines Leader*, newspapers published at Des Moines, Iowa.

Report received and discussed by J. F. Kennedy, J. T. Priestley, E. Hornibrook, A. G. Field, J. M. Emmert, F. S. Thomas.

E. Hornibrook offered an amendment and J. F. Kennedy offered a substitute that the report be referred back to the Committee on Legislation and E. Hornibrook added to the committee, which was carried.

Dr. J. F. Kennedy then offered the following resolution:

Resolved, That the Iowa Medical Society recommend the next General Assembly of Iowa to provide that the State Superintendent of Public Instruction be made a member of the State Board of Health, *ex officio*. Carried.

A. G. Field, of Des Moines, offered the following:

Resolved, That the Iowa Medical Society recommend to the General Assembly of the state of Iowa the passage of a bill requiring the State Superintendent of Public Instruction and the Secretary of the State

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Board of Health, together with such assistance as they may select, to draft plans and specifications for public school buildings, varying in price from $1,000 to $20,000, and to keep such in sufficient number to supply to school districts of the state without charge, when such district shall have decided to build a new school house, the expense of the plan to compare with the cost of the building. Carried.

Section on Ophthalmology and Otology.

"Locomotor Ataxia," by H. B. Young, Burlington. Discussed by E. H. Hazen, F. S. Thomas. Discussion closed by author, and paper referred.

It was moved that W. H. Christie, of Omaha, read his paper on "Strychnia Therapy." Carried. Paper read, received, and discussed by D. W. Finlayson, G. F. Jenkins, C. E. Ruth. Discussion closed by author, and paper referred.

"Direct Trituration in Ripening Immature Cataract," by W. C. Pipino. Received and discussed by F. E. Sampson. Discussion closed by author, and paper referred.

Adjourned at 10:30 P. M.

THIRD DAY, FRIDAY, APRIL 19th.

MORNING SESSION, 9 A. M.

Meeting called to order by First Vice-President.

Section of Ophthalmology and Otology — Continued.

The following papers were read:

"Management of Ear Complications in Infectious Diseases," by F. E. Sampson, Creston. Discussed by several, and paper referred.

Section on State Medicine.

Report — By J. S. Braunsworth, Muscatine. Received, and discussed by A. A. Rawson; J. F. Kennedy; W. L. Bierring; E. T. Campbell. Discussion closed by author, and paper referred.

"Sanitation," by A. G. Field, Des Moines. Discussed by D. W. Finlayson, J. F. Kennedy, A. A. Rawson, R. Hanna, F. E. Sampson, J. W. Kime. Discussion closed by author, and paper referred.

Moved that all papers, the authors of which were present and not permitted to read same, be read by title and referred.

Report of Finance Committee.

We, your Finance Committee, beg leave to report that we have examined the accounts and vouchers of the Secretary and Treasurer, and the Committee on Arrangements, and find them correct, and recommend their adoption.

F. M. HIETT,
W. S. GRIMES,
J. C. HUGHES,
Committee.

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Secretary's Report.

Postage, stationery, express, etc	$ 47.25	
Transcribing discussions	35.00	
Record book	10.00	
Printed supplies	73.75	
One hundred volumes bound Transactions	75.00	
Printing Transactions	250.00	
One thousand copies Constitution and By-Laws	12.00	
Bookcase	8.00	$ 511.00

Treasurer's Report.

DR.

Cash on hand last report	$ 616.00	
From members during year	295.00	
From permanent members at Creston	216.00	
From sixty-four delegates	192.00	
From Committee on Arrangements	90.00	$1,409.00

CR.

By Secretary's order 198	$ 46.90	
By Secretary's order 199	80.50	
By Secretary's order 200	150.00	
By Secretary's order 201	149.50	
By Secretary's order 202	30.45	
By Secretary's order 203	100.00	
By Secretary's order 204	69.61	
By Secretary's order 205	55.15	
By Secretary's order 206	150.00	
By Secretary's order 207	21.50	
By Secretary's order 208	25.00	
Cash on hand	530.39	$1,409.00

Report of Committee on Arrangements.

DR.

Received from exhibitors	$ 90.00	$90.00

CR.

Hall rent, printing, etc	$ 66.61	
Postage, etc	4.50	
Cash paid Treasurer	18.89	$90.00

Moved by D. W. Finlayson that the Treasurer draw sight drafts on all members one year or more in arrears for annual dues. Carried.

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Report of the Committee on Publication.

We, your Committee on Publication, beg leave to make the following report relative to the publication of the transactions:

"The *Omaha Clinic* offers to publish the transactions of the society for the year 1895 for $350, and furnish a copy to each member in good standing for one year from May 1, 1895.

"The *Iowa Medical Journal* offers to publish the transactions of the society for the year 1895 for $350, and furnish a copy to each member in good standing, including a medical directory of the state for one year from May 1, 1895."

W. L. Bierring, of Iowa City, moved to give the printing to the *Iowa Medical Journal.*

Amended to give it to the *Omaha Clinic* by F. M. Hiett and seconded by J. W. Cokenower. The amendment was lost and the original motion carried, giving the printing of the transactions to the *Iowa Medical Journal.*

Drs. Jenkins, Bierring and Spillman were made a committee to prepare appropriate resolutions and reported as follows, which was unanimously adopted:

WHEREAS, The Iowa Medical Society has, on the cordial invitation of the medical profession of the Blue Grass region of Iowa, met for the first time in the southwestern part of the state; therefore, be it

Resolved, That we hereby express to the members of the profession of this locality our thanks for the pleasure we have experienced in meeting among them; and that we owe our appreciation to the Committee of Arrangements, who have so carefully and so skilfully carried out the duties that were placed in their hands, and made this one of the best meetings of this society. That our thanks be extended to the mayor and citizens of Creston, as well as to the proprietors of hotels and restaurants, who have so bountifully ministered to our comforts.

Resolved, That our special thanks be extended to the members of the Century Club for their enjoyable reception, and that our thanks are due to the officials of the railroad companies and to the local press for courtesies extended and excellent reports of our proceedings, and especially to the *Creston Gazette* for its free distribution of copies to the members each day.

Adjourned to meet in Des Moines in 1896.

JAMES W. COKENOWER,
Secretary.

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REPORT ON SURGERY.

By J. M. Emmert, M. D., Atlantic, Iowa.

Read before the Iowa State Medical Society, at Creston, April. 17, 1895.

THE address of the chairman of a section of this society is supposed to be a review of the literature of that particular branch of medicine for the year just preceding the meeting. The medical journals of to-day are so numerous and cheap that every member of this association is supposed to take enough of them to keep abreast of the times and have a fair idea of the advancement made and theories offered in all departments of the profession.

It would be impossible, in the time alloted to me, even to make a meager report of the surgical literature for the past year. I will, then, depart from the usual custom and give a very brief, cursory report, or review, of one subject which has, for the last few years, occupied much attention from all medical men, be they general practitioners or specialists, but more especially of the surgeons.

The title of my paper is, then, "The Present Status of the Surgery of the Vermiform Appendix:" Even with this subject I cannot hope to review the entire field, as the literature accumulated the last few years has become voluminous. I will review but three topics:

First—Are all cases of appendicitis surgical?

Second—When to operate.

Third—The technique.

The scientific literary war between physician and surgeon has gone merrily on for the past year, and the questions at issue are no nearer being settled now than they were one year ago. Are all cases surgical, is still an open question.

By a review of the opinions of the last eighteen months as compared with that of the previous eighteen months we learn that the majority of the great surgeons of America, at least, are more conservative as to their declarations on this question, while the physicians are more positive and are proving their statements by clinical reports. That great western surgeon, J. B. Murphy, says all cases are surgical. So far as I know, he has never qualified this

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statement. He says it is estimated on good authority that from 27 to 30 per cent of all cases treated medically terminate fatally, sooner or later, if not operated upon. He says on that point, "I cannot furnish any statistics of my own, as I operate upon all cases." George B. Fowler, of New York, says, "The great majority of the cases should be treated surgically." McBurney operates upon all cases when there is no doubt about the diagnosis. Sanburn says the "majority of so-called recoveries treated medically are not recoveries in the full sense of the word, but simply a respite which enables one to settle worldly affairs and take out an insurance policy in anticipation of a fatal termination." Fenger, of Chicago, whose statements always demand the greatest respect, and whose mortality is as low as that of any American, says, "At the present day, when surgery, or rather surgeons, are on the verge of claiming appendicitis, almost to the exclusion of the claims of internal medicine, it is important to remember that, on the whole, appendicitis is a benign disease, with a good prognosis, and that, in a great majority of cases, surgical interference is not called for." Robert T. Morris, of Boston, says "the appendix vermiformis should be removed as soon as the diagnosis of appendicitis is made, because no one can tell at just what moment necrosis is going to follow the disturbance of the circulation." Fenger says, "The mortality in general is only about five per cent." Pepper says, "Twenty cases to one are permanently cured without operation." Ranviers collected two thousand cases in the Prussian army, 96 per cent cured without operation. In the Charity Hospital of Berlin, 94½ per cent cures; Nothnagle's Clinic, Vienna, 95 4-10 per cent cures, without operation. Talamon, of Paris, says, "And, moreover, if we take all the forms of appendicitis as they come, without making any distinction, we know with certainty that in 90 per cent the disease gets well without the aid of the surgeon."

These are the opinions of only a few of the prominent surgeons, but enough to show that the drift of American thought is toward conservatism.

When to operate is the next most important question, and a question which throws a great deal of responsibility upon the surgeon. If he does his own surgical work he has to watch for the

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opportune moment and be ready to operate. Then, if he does not operate himself, he must no less be able to seize the right time and send for a surgeon. And right here is where the greatest diagnostic skill and judgment is demanded. It is impossible for any living man, be he the most expert diagnostician, to say just what the condition of the inflamed appendix is, whether it is full of pus, ready to perforate, or already perforated, gangrenous or infiltrated with septic matter. If it were possible to determine the condition of the appendix, the great mooted question of appendicitis would be settled.

Just when to operate or not to operate would settle the bone of contention between physician and surgeon. Murphy says, "The operation should be performed at the earliest possible moment after the onset of the symptoms," and he gives the following as diagnostic:

"*First*—Sudden attack of pain over abdomen finally referred to the region of the appendix.

"*Second*—Always nausea; frequently vomiting.

"*Third*—Local tenderness in the position occupied by the appendix.

"*Fourth*—Previous constipation."

He would operate upon all cases presenting these symptoms. One of the internes of Cook County Hospital says he saw him operate upon the single symptom of nausea. Fowler says as soon as the diagnosis of progressive appendicitis is assured the abdominal cavity should be opened and the appendix removed. Fenger says the mortality of early operation is not great, and proceeds to give some statistics, when he says: "There is little or no dissent to the advice not to operate at the first acute onset of symptoms, but to wait until these symptoms subside." Ranviers advises that the operation be made if the tumor increases slowly. Treeves will not operate until after the fifth or sixth day. Morton says not to operate later than the third day. Thomas Bryant says the wisest course is to delay operation. Joseph Price justly remarks that early operation is not measured by the duration of the disease, but by the time of the duration of severe symptoms. These questions are taken from an article of Doctor Fenger, written in 1893, and some of these authorities may have changed their

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opinions since, although the tendency of past years is toward conservatism, or delayed operation.

It seems to me that the only rational and scientific way of answering these questions is that each case must be carefully studied and the surgeon governed entirely by the symptoms, as in the acute septic, or fulminating cases, the symptoms are so urgent that an immediate operation is demanded within, if possible, the first twenty-four hours; even then it is sometimes too late. I saw a case a short time ago in a physician where the operation was made within thirty-six hours after the first symptom, yet the abdomen was full of sero-pus, and he died within thirty hours after the operation. I operated upon another case where the man was sick eighteen days, yet the symptoms were not alarming at any time. In the acute stage of the first week of the disease, the temperature ran up to 102½°, and then gradually dropped to 99°, although there was a peri-cæcal abscess containing over a quart of pus at the time of the operation. Surgical interference must be governed by the pathological condition of the organ and, as it is not always possible to determine this by any diagnostic test, the question as to when to operate must remain in *statu quo*.

The technique of the operation is a very important matter, as often the life of the patient depends upon whether the surgeon knows just what to do and how to do it. Almost every case presents difficulties peculiar to itself, from that of opening an abscess, to that of resection and anastomosis of the gut. The location of the diseased appendix has much to do as to how and where to make the incision. Bryant's table throws much light upon this point. Out of 144 cases, it was behind the cæcum in 32 cases; on median side of cæcum, 24; below and down toward the pelvis minor, 21; straight down in the pelvic fossa, 5; outward and on outside of cæcum, 7; high up under the liver, 1.

The appendix vermiformis is a nomad, and has no permanent abiding place, but may attach itself to any organ within the abdominal cavity. The position and direction of the incision depends entirely upon what the surgeon intends doing and the pathological condition of the organ. All surgeons agree that if the object is to remove an appendix free from adhesion, or adhesions without pus cavity, the vertical incision is the one selected.

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While, if a tumor is present, and pus is diagnosed, the incision is made over the most prominent portion of the tumor or so as to secure the best drainage, and less danger of opening the peritoneal cavity. If there is doubt about the diagnosis, and the incison is to be exploratory, the median line is usually selected. In all cases where there is a tumor, whether there is pus in it or not, Dr. Murphy cuts to the median side of the tumor and opens the peritoneal cavity before the abscess is opened, then walls off the cavity with gauze, afterwards opening the abscess. This information was given me by a Cook county interne, who was working with him this year.

In the cases given in his article read before the Pan American Medical Congress, he did not open the free cavity first, but opened directly into the pus cavity. I could not get a very clear idea as to the advantage of this procedure over that adopted by most surgeons, that of opening directly into the abscess. After the abscess has been opened, one of the most important things to decide is should the appendix be removed. Of course, if the appendix is found free in the abscess cavity, there would be no question about its removal; but should the appendix form a part of the protecting wall, or be fastened down by the adhesions, what should then be done? Byron Robinson says, "Never attempt to remove the appendix, or even hunt for it, as the least manipulation may break down the barrier between the abscess and peritoneal cavity." Murphy always removes appendix if possible; sometimes even taking great chances of infecting the peritoneal cavity, rather than leave a diseased organ. Senn takes the same position and says, "Always remove the appendix, if it is at all possible." Fowler says it is to be carefully freed from its surroundings by the finger of the operator; but in the attempt the surgeon must not lose sight of the fact that he may do more harm than good if the organ is so placed as to form a portion of the protecting wall of adhesions. Treeves advises when the appendix is very adherent, it is better to make no attempt to remove it by dissections, or even to separate it from its adhesions. McBurney does not waste time by searching for the appendix. Morton insists the operation cannot be regarded as complete unless the appendix is removed. Sonnenburg advises almost always to

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extirpate the appendix, even if the peritoneal cavity has to be opened for this purpose. Fenger says if the aim be to evacuate the abscess, make an incision over it wherever found, with a view to the avoidance of the free peritoneal cavity, and make no attempt to find the appendix.

We notice from these extracts that the best surgeons differ as to this procedure; that all agree that where the appendix is free and can be easily removed, to remove it, although Tait, at one time, opened and drained it, and Treeves tried freeing it from adhesions and leaving it; but both have now abandoned this procedure. As to drainage, I believe all surgeons wash out the peri-cæcal abscess, and then pack with iodoform gauze.

In operating upon a pus case the surgeon should always carefully search for isolated pockets of pus, which are sometimes entirely separated, or walled off, from the main abscess cavity. I lost one patient by being content in simply opening and draining quite a large and superficial abscess, and which I supposed to be a traumatic abscess of the abdominal walls, the abdominal muscles being the floor of the abscess. Forty-eight hours afterwards I was called back, and found upon examination, a peri-cecal abscess communicating through a pin-hole with the one that I opened. In washing out the deep abscess, I found a pin which had evidently worked up through the abdominal muscles infecting the cellular tissues above, then dropped back into the cavity below.

If there is any one thing that will cause a surgeon to wish that he had never been born, it is that of having a fulminating, or hyper-acute perforating appendicitis of Talamon, as the chances of doing anything to relieve the patient or to save his life are so small that his efforts, whatever they may be, are almost nil. The mortality is 95 per cent; yet the physician or surgeon cannot step aside and tell him he can do nothing, for there is only one thing to do, and that is to open the abdomen at the earliest possible moment. When he has made his incision into the peritoneal cavity and finds few or no adhesions, but does find flowing out a thin, milky sero-pus, what is he to do; shall he go ahead and remove the appendix, and wash out the abdominal cavity, or shall he content himself with simply draining, and leave the appendix? Murphy and other advanced thinkers, do nothing but

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drain, hoping, in this way, by the aid of nature, to get rid of the pus in the cavity without disturbing it, or distributing it over an uninfected territory, or water-logging the peritoneum.

I saw one of the best men in our profession die some months ago with this disease, and it was a sad lesson to me of our utter helplessness, when we have to deal with this condition. We, as Americans, have the proud satisfaction of knowing that, to American surgery is due the honor of a scientific investigation of this disease and the perfecting of the technique of the operation, until to-day, the mortality has been reduced almost as low as that other great American operation, ovariotomy.

THE TREATMENT OF HERNIA.

By Lewis Schooler, M. D., LL. D.

Read before the Iowa State Medical Society, at Creston, Iowa, April 17, 1895.

THE fact that nature abhors vacuity, is not an evidence of perfect development in all animals, and in some that are apparently well developed we find anatomically weak places. The surgeon, therefore, endeavors to supplement nature and render these weak spots more sightly and stronger.

The difficulty is not that the place is defective, but it is the *sequelæ* that entail the suffering and cause disability.

That it has required a long time to invent an operation practically free from danger, and efficient as a radical cure for hernia, is not to be wondered at,—it could only come with the improved methods of wound treatment. Peritonitis and sepsis deterred the boldest operators; taxis and the inability to promise results where strangulation had not caused necrosis, deterred many who would have submitted to surgical procedures for the relief of strangulation, and also the surgeon from attempting to secure permanent results. While this condition of affairs existed, it proved an insuperable barrier to the most scientifically devised procedures. But with anti-sepsis came the knowledge of peritoneal tolerance, and the absence of destructive suppuration. Singularly enough, however, there lingered a belief in a greater firmness of cicatricial

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tissue after granulation in preference to union by first intention. This seems the more anomalous in view of the fact that in all other forms of abdominal surgery, union by first intention was considered desirable. While the light broke slowly, it came at last, and with such force, that many modern tyros deem themselves qualified for the performance of the operation. This is to be regretted as one of the opprobriums of surgery, for the reason that one who becomes a successful operator in these cases must have an accurate knowledge of the anatomy, and be possessed of a knowledge of the technique of the procedure. Without these there will be more fatalities than are necessary, and the number of failures will be greatly in excess of what should follow careful procedures. The latter is too frequently overlooked, the operator being satisfied with saving the life of his patient, or rather that his patient does not die.

This, in acute cases, is a great gain; but, as it requires but a few minutes more time to make the radical operation, and adds nothing to the risk, we should not consider our success complete without the accomplishment of a radical cure in this class of cases, as well as those undertaken more deliberately and only with the view of a radical operation.

There are several procedures bearing the names of those who are supposed to have originated them, or at least were the first to describe them, all more or less similar, and do not differ greatly in character.

The only one that departs materially, and it is the one to which I give the preference, is Bassini's. The displacement of the cord and making for it a new canal is an improvement, and one that does not entail any unnecessary or dangerous degree of violence to the tissues.

Halstead's operation is practically identical with Bassini's, except in the location of the cord, a detail that I am satisfied in most cases is unimportant; but, as there is to be a paper by another gentleman on that operation, I shall refrain from details. Both differ from Macewen and McBurney in not attempting to repair the old canal, and in the formation of a new ring and a new canal. The suturing in all is by layers of buried sutures. MacCormac's method possesses advantages over the others in bringing together

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a broader surface which, when united, gives greater strength. Whatever operation is performed, attention should be given to the length of the incision; short incisions fail to give complete access to the proper field of operation, hence the incompleteness of the operation. The incision should extend from Poupart's ligament in a direction upward and outward from one half to one inch above the internal ring, and in obese persons even a greater distance may be advisable.

The knife should be used from start to finish; tearing with the handle and finger are unsurgical, and demonstrate a lack of anatomical knowledge, and result in the production of a wound in which the different layers are not easily distinguished.

An operation that I have used in a number of cases, and one that has seemed to me as nearly the ideal as any, is performed as follows: A free incision of good length; one in which the middle is slightly below the internal ring, this is usually five or six inches long and, in obese persons, even longer. The upper edge of the ring is then incised as in the reduction of strangulation, the sac is then dissected from the surrounding tissues if adherent, also a distance of one inch within the abdomen; the cord and vessels are then carefully separated and held out of the way, the sac is now opened and, if intestines or omentum are adherent, they are separated and returned to the abdominal cavity. The sac is then twisted slightly and ligated with catgut, the tissues are then sutured after MacCormac's method, the cord and vessels lying beneath the skin. If the scrotal portion of the sac is adherent, it is left undisturbed, and only that portion occupying the inguinal canal is loosened and removed. This shortens the operation, lessens the hemorrhage as well as the extent of the wound, and prevents extensive œdema of the scrotum.

The advantages of this method over the open one is the shorter time the patient is required to remain in bed, and the infrequency of the dressings, there seldom being any necessity for the application of a second dressing. Is the objection made that union is less firm than after healing by second intention in any other abdominal procedure where union by first intention is possible? I am not without experience with both methods and both have been satisfactory with reference to the permanency of

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results; but the advantages of a method which lessens the time of convalescence one-half to two-thirds is not to be ignored in these times of haste. My patients are allowed to get up after the fifteenth day, and are directed to move about with care for the next week, at the end of which time they are to consider themselves cured and capable of performing any ordinary labor that does not require too heavy lifting or straining.

I have not found the application of a truss necessary, and never advise its use after operation.

Perhaps in a paper of this character something ought to be said about methods that are partly surgical and partly medical as well as some that are entirely mechanical. Both are extensively practiced in our larger towns by persons who call themselves "hernia specialists," each advertising a special method usually known by the name of some individual who is, by the laity at least, presumed to be the inventor of it.

The first in importance is what is known as the injection method. What substances are used is usually unknown to the person using them, as they are usually furnished by the party who assumes to be the proprietor of the method. The object to be attained is the production of an adhesive inflammation which, being reparative in its nature is, theoretically, correct and embraces a well known surgical principle, and could it be produced with definite certainty would be a valuable acquisition to our therapy in this class of cases. But the numerous instances of abscess production, and the occasional death of a patient, with numerous recurrences of the original difficulty, has so effectually demonstrated the unreliability of the method as to render it almost useless to the profession and suitable only to the persons in whose hands it is now found.

That many cases can be cured by the injection of so simple a substance as 70 per cent alcohol can be demonstrated to your own satisfaction, if you are fortunate enough to have a patient whose confidence in you will remain unshaken for two years. Many of the other mixtures used by these persons will accomplish the same results in the same length of time, but none of them in the time that is promised. That they do produce temporary adhesions within four to eight weeks we have abundant evidence, and the

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certificates of cures which are obtained at the end of this time are frequently made by honest but deluded persons.

The second method is that of the application of trusses of various patterns, but as trusses and the principle upon which they are based, are so well known to you I shall not take up your time in discussing their merits.

THE BASSINI OPERATION.

By W. D. Middleton, A. M., M. D., Davenport Iowa.

Gentlemen of the State Medical Society: It was never my intention to make of this a formal dissertation on hernia, or to go at all into the history of the matter, but simply to lay before you my own predilections in the matter of hernia operations, from a small experience with the operation above named.

It is a matter of common anatomical knowledge, dwelt upon by all those who lay down anatomical foundations for hernia operations, that the canal which carries the cord in the male, and the rings at either end, form the weak point in the abdominal wall, and to the evolutionist, the escape of abdominal viscera through this tube, is one of the disadvantages of the erect position of the animal. And this canal is very cunningly contrived; it runs for nearly two inches between thick walls; its contents passing into the internal ring with quite a sudden turn, passing out similarly through its external opening; and it would seem as though the pressure of the abdominal contents against it gives it a strongly valvular action, preventing escape. The arrangement is similar to that by which the ureter finds its way into the urinary bladder; the pressure of intra-vesical contents effectually closing the tube against flow in either direction.

We all know how the character of this tube is changed by hernia, and I don't propose to dwell upon the causes of the protrusion—probably a long mesentery, in many cases—and we know how the canal is stretched laterally, and how its length is obliterated by the two rings being practically thrown into one. From that condition it would seem the only scientific course to attempt the restoration of the length and breadth of the canal; and that

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is about what Bassini does. (Though there are many others who do the same thing.) But when the Bassini operation is properly performed, it is certain that the valvular character of the canal is again fully restored.

The operation is a distinctly simple one, as most of you know: An incision in the course of the canal lays it open its entire length and is carried down some distance upon the scrotum.

The sac of the hernia is sought and carefully separated from the neighboring tissues. It is then opened, its contents, if there are any, either returned into the abdominal cavity, or in the case of a quantity of omentum, tied off, the tube drawn down, as far as can be reasonably done, and a solid ligature tied at that point. There is no doubt that tying the ligatures at a high point is a very important step in the operation, and you have noticed that all operators are agreed in this particular, the object being to occlude entirely the funnel-shaped depression in the peritoneum, which invited the protrusion of abdominal contents at that point.

The next step of the operation is to lay the cord tightly over to the outside of the wound, and then seizing the edge of the internal oblique, stitch it by a number of strong sutures to the under portion of Poupart's ligament. This constitutes the floor, so to speak, of the future canal, and the upper stitch is set so snugly up to the cord, that for some time a condition of apparent varicocele is produced. Then the cord is laid back on this floor, and the edge of the external oblique is fastened with similar stitches to the accessible portion of Poupart's ligament, and thus the roof, so to speak, is laid on. Then the skin is sutured over all. At this day it seems unnecessary to say that all is done antiseptically.

With this properly done, the valvular character of the original canal and its pristine obliquity are restored, and that should be the object of all operations.

To be sure, the protrusion may be reproduced, and it may begin as it originally did, with a slight enlargement of the internal opening, and so on, to full hernia, and there is no operation possible of devising, which would not leave this possibility, unless indeed, we could remove the testicle and cord, when the matter would be simple.

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There are many operations like Bassini's either original or modified.

Marcey's is like this, and he claims that the buried sutures in his operation are his contributions to American surgery.

Halsted, after opening the neck of the sac, fastens it with mattress sutures, and then ties off most of the spermatic vessels, so as to make the cord small. The cord is then laid over the joined fasciæ of the transversalis, internal and external oblique, and under the skin, which is laid immediately over it.

Kolliker draws the sac through the small opening, and twists it with a cord, when it is laid down, and covered up with sutures.

Shimwell, of Philadelphia, claims that a long mesentery causes hernia, and he advises laparotomy, and the folding of the mesentery on itself, where it is retained by interrupted sutures.

Macewen makes the sac into a pad, with which he occludes the original opening.

Bishop, of Manchester, with a purse string suture, draws the sac tightly up to the opening, and fastens it to the wall, and calls this a "natural truss."

Frank, of Vienna, chisels out the canal in the upper edge of the horizontal ramus of the pubes as a canal for the cord. And so on. But all of these seem to me less simple and scientific than the Bassini.

The matter of suture material need occupy us little, for all kinds, from catgut to silver wire, are buried and seem to take care of themselves. Marcey, you know, insists on kangaroo tendon, but silk seems always the material for comfort.

In 1893, Bassini had 251 cases reported, all but four of which were traced. And this list showed but seven relapses, and no mortality. Surely this is a brilliant record; the most brilliant with which I am acquainted.

La Place, of Philadelphia, reported a month ago, 140 cases, with one death, and the cause of death in that case it was agreed, was in no way connected with the operation.

There is much difference of opinion as to whether a truss should be worn for some time after the operation, or not, and there are weighty arguments on both sides.

Marcey objects entirely to using a truss after his operation.

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Bassini recommends one worn for some time.

The pressure of a pad is objected to by some, as likely to weaken the tissue built up by the operation. But this, it seems to me, is less of an objection, than the likelihood of viscera forcing their way through the recently constructed opening, before sufficiently solid under various forms of strain.

My personal experience before the past year with radical operations, had always been with the procedure known as McBurney's. But I shall certainly never try it farther. And with this operation such experience is limited to the small number of five operations, and all within a time so small as to preclude the possibility of accurate prognosis as to stability; but one may perhaps be pardoned for announcing himself prematurely, as commited to a procedure, on the ground of *a priori* conclusion. If not, there be many excuses for a righteous enthusiasm.

RECTAL STRICTURE.

By C. E. Ruth, M. D., Keokuk, Iowa.

IN MALIGNANT diseases of the rectum, no one hopes for anything except palliation in colotomy or by Kraske's operation or some of its modifications, so I shall confine my paper to the consideration of a large class of strictures of non-malignant origin, 50 per cent of which are probably syphilitic.

There is no doubt that ulceration of the mucous membrane with subsequent cicatricial contraction is the cause of almost all rectal strictures, whether they be of specific origin or not. Most strictures will be located not farther away than four inches from the anus. They will be painful if situated low down; otherwise the discomfort from stricture is due to obstruction almost entirely. So great an authority as Allingham has said that strictures of the rectum are more prone to relapse than those of the urethra and that they cannot be *quickly* or *permanently* cured. The recognized methods of treating rectal stricture, are conceded by all of our authorities to be dilatation slow and rapid, posterior proctotomy, colotomy, Kraske's or Bacon's operation, and all agree that the results are most unsatisfactory.

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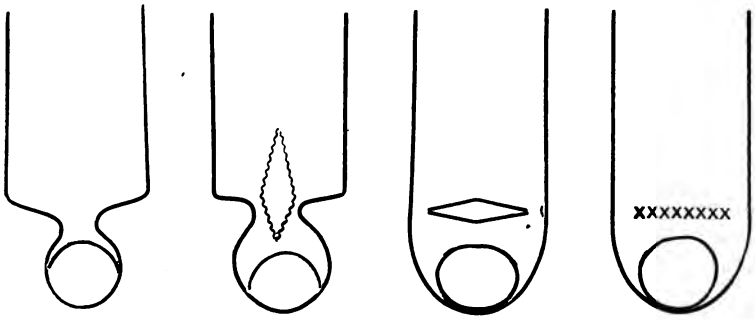
With these pleasant reminders, I was called to operate upon Mrs. M——, aged thirty-four years, with the following history: She had an abortion and syphilitic infection fifteen years ago; had never been well since though has every appearance of being well nourished. For four years, everything passed her rectum has been washed away, necessitating large rectal enemeta, following strong cathartics, which have been used almost daily for the entire period. Her suffering has been extreme, producing severe prostration following each defecation. She had been previously operated upon twice, the last operation not more than a year before she came into my hands. She had had fistulæ and previous operations have given no relief whatever, excepting to cure the fistulæ. Examination revealed an annular stricture just above the internal



Rectal Stricture.

At rest, after divulsion, showing tendency to reproduce contraction in subsequent cicatrization.

Stricture and anus divulsed, showing the tear through stricture spread.

Direction of rent when sutured.

sphincter, scarcely admitting the tip of my index finger. This was three-fourths of an inch in width and of extreme density. It was dilated gradually and finally completely divulsed, together with the sphincter ani. Upon inspection it was found that the stricture had yielded anteriorly and posteriorly in a direction parallel to the long axis of the intestine, and therefore directly across the stricture. The anterior rent was fully two and one-half inches in length, extending from above the stricture to the anal margin, while the posterior rent was at least one and three-fourths inches long. With the rectum distended by narrow lateral retractors, I noticed a tendency to change the direction of the rents; they tended to pass in a transverse direction to the

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lumen of the intestine. As soon as the lateral retraction was discontinued the rents again assumed a vertical direction. Acting upon this hint, the rectum was again stretched to its full breadth and the highest point of the rent in front was grasped and the mucous membrane slid over the underlying connective tissue and stitched to the lowest point of the same rent. Continuing the suturing process laterally, what had been a rent vertical to the axis of the intestine was now closed laterally so as to pass nearly half way round the rectum. The posterior rent was dealt with in the same manner as the preceding. No tissue whatever was removed and no raw surface was left exposed. Since the operation no laxative has been required, for the bowels moved spontaneously on the fourth day and have continued to do so daily without any aid and without pain. Two and one-half months after the operation three fingers could readily pass the site of the old stricture; in fact, there is no contraction of the lumen of the gut and nothing to make it without further ulceration.

I make no claim to originality in this principle, but only in its application to strictures of the rectum, for two years ago Fenger, in dealing with stricture of the urethra, incised the contraction longitudinally to the long axis of the urethra to a point considerably above and below the site of narrowing and stitched the wound transversely so that the caliber of the urethra was greater than normal at the point of former stricture. In my case we used the same principle, and made the rectum as wide as we cared, at the same time leaving it shorter, which is in no manner a detriment to the individual. The loose connection of the mucous membrane to the middle coat is such that we may expect to be able to deal with rectal strictures in this manner safely and with absolute certainty of success, if placed within four inches of the anus and the stricture be not more than one and one-half inches in length.

I would not wish in this to be understood to criticise any former stand I have taken in the use of other methods in dealing with these cases, for when the stricture involves more than one and one-half inches of the rectum, or is placed more than four inches from the anus, recourse must be had to Bacon's operation, which is not applicable to strictures low down in either male or female. Fortunately, most rectal strictures are low down, consequently

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amenable to my operation, which is simple, safe and leaves the gut more nearly in its normal condition than any other operative device, while the patient retains perfect control of the alvine evacuations with the intestinal terminus normally placed. Besides, the patient escapes the danger of a major operation. Mentally I have objected to this operation on the ground that the rent is liable to leave a ragged margin, and consequently is not, surgically speaking, the best kind of a wound from which to expect prompt recovery. There is no objection to incising the contraction anteriorly and posteriorly, to the limit the surgeon may desire, and carrying out the identical plan advised above. When the stricture is a long one the rent or incisions should be closed obliquely if it is found impossible to stitch the highest point of the rent to the lowest point without undue tension.

MANAGEMENT OF TUBERCULAR RECTAL FISTULA.

Chas. C. Allison, M. D., Omaha, Neb.

IN NO disease is a study of the patient's general condition more important than in tubercular invasions about the lower bowel. Indeed, the success of surgical measures depends largely upon the use of intelligently selected local and general medicaments with the complement of hygienic and sanitary aids.

The location of the inceptive focus, whether upon the mucosa or in the ischio-rectal or superior pelvi-rectal areas, and whether primary or secondary, are features also which modify the treatment.

Primary tuberculosis of the rectal mucous membrane is invited in the susceptible subject by the frequent traumatism of constipation, impaction and injections, upon a surface where nutrition is embarrassed by engorged and dilated blood vessels, and this lesion, when not arrested, leads to a fistula of the internal variety.

The marginal fistula is not usually tubercular, although its entrance into the bowel below the sphincter muscles makes operative steps simple, and the chances for prompt repair favorable.

The loose connective tissue support which is afforded the blood vessels in the ischio-rectal space impairs nature's effort towards

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repair when the small blood vessels have been injured, and the leucocyte is an easy prey to the tubercle bacillus.

When the abscess is not promptly evacuated, and carefully treated, a complete fistula results, with its internal opening above the sphincter muscles.

The limitations of the superior pelvi-rectal space being peritoneum above, levator-ani muscle below, rectum internally and pelvic walls laterally, afford abundant room for extensive retrograde changes, in a space deep posteriorly, and contracted in front, which allows burrowing through the sciatic notch, or over Poupart's ligament, or what is more common, invasion of the levator muscle with an outlet at the side of the rectum.

There are fewer chances for an internal opening in a fistula due to this high abscess, than from that in the ischio-rectal space, and the upper end of the sinus is frequently separated from the bowel by a thick zone of healthy tissue.

The location, therefore, of the early invasion of the inflammatory changes, leads to the formation of different types of fistulæ and to some changes in the operative technique appropriate in each case.

With a large sinus, presenting cyanotic and overhanging edges, indolent granulation tissue, absence of pain, sanious discharge and a marked tendency to deeply excavate the surrounding tissues, we are confident of the tubercular nature of the trouble.

The tubercular ulcer should be freely curetted with due observance of the rules of surgical cleanliness, after which I use locally over the base of the ulcer, *guiacol in ol. amygdali.*

Moderate exercise, good diet and the use internally of pure beech wood creosote in increasing doses, promises, I think, the most certain chances of repair. Bismuth and codeine are useful in regulating peristalsis when there is a tendency to frequent mucus discharges.

In the marginal fistula, the main sinus leading into the bowel should be laid open, overhanging indolent edges excised, the cyanotic base curetted, additional sinuses incised, after which the sides of the raw area may be accurately apposed by buried catgut and the skin brought together by silk.

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The track which follows an ischio-rectal abscess is usually either complete or the upper end is so near the bowel that it must be made complete in incising the main and collateral sinuses. After this is done, the application of iodoformized ether is useful on account of its tendency to reach the irregular pockets in the base of the track.

The sinus which follows the abscess of superior pelvi-rectal origin need not, as a rule, be made complete, because a layer of healthy tissue of sufficient thickness will allow of free incision of its sides, without endangering the integrity of the bowel, and when the fistula has a single sinus, this treatment will effect a cure. When, however, multiple sinuses are found burrowing through the perineum in a patient, anæmic, emaciated and hectic, with pronounced tubercular deposits elsewhere, our first step should be directed toward local palliation and constitutional improvement.

The internal use of beech wood creosote, preferably by the bowel, and the injection of pyrozone, followed by guiacol and bitter almond oil into the sinuses will usually result in a decided improvement. The small tracks will frequently close and a radical operation will be less hazardous.

To secure rest in these cases, either before or after the operation, no remedy in my experience is so useful as trional. This drug given in twenty-grain doses, not only produces natural sleep, but it leaves no ill effects and it is useful in controlling the night-sweats, which are so distressing in tubercular disease.

When tubercular deposits in this region are secondary, even when constitutional symptoms are pronounced, an operation is indicated under the directions mentioned when the local condition is more annoying to the patient than the deposits elsewhere in the system.

The general management, therefore, may be summarized as follows:

First. The local use of guiacol in bitter almond oil possesses antipyretic effects and has valuable germicidal properties upon the bacillus.

Second. Iodoformized ether is valuable when the abscess cavity is large, or when the sinus presents multiple tracks.

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Third. Creosote, internally or by the bowel, is the most valuable agent for systemic improvement.

Fourth. Trional induces rest and controls excessive diaphoresis.

Fifth. Moderate exercise, good hygiene, and, when possible, a change of climate, are advisable in convalescence.

Sixth. The careful use of medicinal agents should not be neglected, because operative measures are employed.

PATHOLOGY OF FRACTURE OF LONG BONES.

By D. S. Fairchild, M. D., Clinton, Iowa.

WHEN we examine the architecture and mechanisms of the human body we are impressed with the beautiful and utilitarian arrangement of the connective tissues and connnective tissue substances, which so perfectly serve to bind together the different parts and to afford support and protection to important organs, facilitate locomotion, and permit the complex movements which are so necessary to the fulfilment of the purposes for which man was created.

A minute examination of the details of the architectural plan will show in the case of the long bones that the arrangement of the elements is such as to place the greatest strength in the line of the application of the greatest force ; and, further, the general outline of the bone is made to conform to the best theory of resistance most economically applied. In the instance of the long bones there is a slender shaft, terminating in enlarged extremities. The shaft which constitutes the arm of a lever, is of firm compact bone with its Haversian systems running parallel. In the expanded ends, which are for the purpose of affording greater security for the articulations, the bone trabeculæ are arranged in the main in the direction of the greatest resistance, *i. e.*, in the line of the long axis. In addition to the mechanical arrangement is the admixture of organic and inorganic matter in such proportions as to give the greatest strength and resistance.

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The long bones are so situated as to specially expose them to the chances of accident, and hence fractures are among the most common occurrences. This accident comes from the application of force, direct or indirect, which is in excess of the normal index of resistance as applied to the particular bone and the particular individual, and the direction of the fracture will depend upon the direction of the force and the line of least resistance.

The special predisposing influences which may aid in determining a fracture — as to being simple or comminuted — will be certain pathological conditions, which affect the normal resistance of the bone — as syphilis, tuberculosis or any degenerative condition leading to an osteo-porosis or to the undue proportion of lime salts.

The fracture having occurred and the fragments been reduced to their normal position and retained by proper retentative apparatus, the process of repair soon commences and goes on to the restoration of function, unless interfered with by some pathological condition which may affect union, delay it, or prevent it altogether, or even after union has taken place lead to reabsorption of the callus and the formation of a false joint.

The healthy and perfectly formed man goes about all unconscious of the adjustments which make his graceful and easy movements possible. But if, unfortunately, accident or disease overtakes him in such a manner as to involve the long bones, how painfully conscious he becomes of his disability and how anxiously he seeks for such aid as may return the usefulness of the affected parts. It is to this end that surgeons have studied, experimented and practiced with a zeal and enthusiasm born of a desire to obtain the best and most perfect means of securing to the unfortunate sufferer a perfect restoration of the functions of the diseased or broken member.

The reparative process is essentially the same in all varieties of fracture, although the results will differ according to the nature of the fracture and the circumstances which attend it. In a simple fracture the process is the production of osteoblasts which soon appear from the osteogenic layer of the periosteum and from the medullary canal. The canal is filled with granulation tissue which in turn gives place to spongy bone. In the ends of the bones the intercellular substance becomes more transparent and presents the

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appearance of hyaline cartilage and in the early periods is in fact composed largely of hyaline cartilage. As soon as the immediate inflammatory process arising from the injury has subsided the osteoblastic elements derived from the above mentioned sources develop into spongy bone.

The transformative process commences at points some distance from the seat of fracture, gradually approaches the ends of the fragments and finally comes together, forming a callus of spongy bone which covers the fracture. This spongy bone tissue in time becomes denser as the lime salts are deposited, the cartilage-like material in the ends of the fragments is absorbed and replaced by bone cells, followed by deposits of lime salts. When union has taken place the excess of material in the callus is absorbed, commencing in the medulla, which is now opened up and filled with red marrow, continuing in the external callus finally leaves the bone in its original condition if the fragments are maintained in proper coaptation.

The process of repair then, involves simply the new formation of bone from protoplasmic elements for the purpose of restoring the tissue to its normal physiological functions.

Delay in the complete and satisfactory healing of a fractured bone may result from certain pathological conditions which interfere with the complete evolution of the process of repair. The most common influence is the failure to obtain complete immobility of the fragments by the employment of imperfect means of retention. Delay may be induced by some special pathological condition residing in the bone itself which interferes with the early development of the proper amount of osteoblastic material, or to the timely deposit of lime salts delaying the hardening process and thus permitting of bending of the bone at the seat of fracture, giving rise to angular deformity if the condition is not corrected.

No doubt defective general nutrition in some cases delays the healing process, although this does not appear to be very common except perhaps in pregnancy or syphilis. A prolific cause of delayed union is the influence of the trauma in the part itself. The injury to the tissues and blood vessels caused by the violence which occasions the fracture — even in simple fractures —

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is sufficient to interfere with the bone repair for some time; and in compound fractures where the damage is presumably greater the liability to delay in union is more marked. In cases of compound fracture where infection has occurred, and a degree of suppuration has developed, union is much delayed or has been interfered with altogether until efficient antiseptic measures have been employed and pus formation ceases.

Absolute non-union may occur under any of the above mentioned causes or to the interposition of muscular or connective tissue between the ends of the bones, or in cases of comminuted fracture where a fragment of bone is displaced transversely between the main fragments, or where the ends of the bones are displaced to such a degree as to prevent the fragments coming into proper relation with each other.

The frequent damage suits largely grow out of the fact of some pathological condition existing which was not sufficiently taken into account, or which could not have been foreseen, but which has prevented the prompt union and the completion of the nutritive processes involved, and a fractured bone, which was properly adjusted and retained, afterwards becomes deformed by the action of the muscles or by the weight of the body. My observation has been that in cases of simple fractures, attended with considerable local violence, and especially in compound fractures in which the tissues and blood vessels are necessarily much damaged, the physiological process of repair will be more or less interfered with and the new bone elements will appear slowly, with a strong tendency to retrogressive pathological changes, involving a loss of the embryonic elements furnished in nature's efforts at repair, and in some cases, not only resulting in the degeneration and disappearance of new formed bone elements, but also the degeneration and absorption of bone at the ends of the fragments, thus leaving the ends rounded and joined only by connective tissue.

Two cases have come under my observation where, after solid bony union had taken place, the callus was re-absorbed, resulting in non-union. Both were cases of compound fracture, one of the radius and one of the radius and ulna. In the first case the radius had united in a satisfactory manner and the patient was discharged at the end of the eighth week. The callus was well marked and

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nothing but a satisfactory result was anticipated. The patient returned in about five months with free movement between the ends of the fragments ; the entire callus had been re-absorbed, the ends of the bones rounded and united by ligamentous attachment. In the second case, an extensive laceration of the soft parts existed in connection with the fracture, bony union did not occur and the bones were united by ligaments. In connection with Dr. Hostetter, of Colo, to whom the case belonged, I exposed the ends of the bones, resected and wired ; good bony union followed and we congratulated ourselves on the result. The patient appeared, however, in about three or four months with the bony material entirely absorbed and with free motion at the seat of operation. Having secured a position in one of the departments at Washington, he was again operated on in the same way at the Garfield Hospital by Drs. Kerr and Ford Thompson. I received a courteous letter from Dr. Kerr, detailing the method employed and expressing great satisfaction at the result. Some months later I had an opportunity of examining the man and found that the bony material had again disappeared, bones rounded and united by ligamentous material. I wrote Dr. Kerr concerning the results of my examination, at which he expressed great surprise. A few weeks later the doctor himself had an opportunity of confirming the fact by a personal examination. So far as I know, no additional efforts have been made to secure bony union, and the man makes good use of his hand by the aid of a laced sole leather splint.

In the first case the disappearance of the bony material from the callus was apparently due to an early and injudicious use of the arm and before the transformation process was complete. The embryonic elements may not have reached a mature, fixed and stable condition and the disturbance led to their degeneration and absorption. In the other case the conditions must have been somewhat similar. In both cases the nutritive energy was not sufficient to admit of any disturbance even of a slight character. In view of this possible fact the surgeon may have been negligent in not insisting on a much more prolonged immobility of the parts.

The delay in union due to the arrest of nutrition involves the necessity of using certain surgical measures which will light

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afresh productive inflammation and lead to the stimulation of the formation of new cells. The interposition of foreign bodies, as muscle, connective tissue or displaced fragment of bone between the fractured ends involves a pathological condition which interferes with the joining of the two ends with osteogenetic material, and therefore, no matter how active the reparative process, union cannot take place and the active interference of the surgeon becomes necessary.

The difference between a transverse and oblique line of fracture is very important, both from a pathological and practical point of view. Not only in the matter of retaining the fragments in place, but also in the subsequent shortening which may occur in consequence of the yielding of the imperfectly hardened bone, and it no doubt often happens that a degree of disappointment follows the discovery of a shortening which did not exist when the splints were removed. Hence it is that we feel a degree of anxious uncertainty as to the proper time to leave a fractured bone, especially of the leg, to itself. A rule to be observed in this matter can scarcely be formulated. We can only take into account the length of time required for the formation of the osteoblasts, the deposit of lime salts and the removal of the surplus material; *i. e.*, the time required for the completion of the special nutritive process incident to the repair of the fractured bone, which will in a measure depend upon the vascularity of the bone, the relation of the fracture to its vascular supply and the disturbing influence of the trauma upon the bone and the soft parts.

In fractures of long bones near articulations, troublesome complications sometimes arise from the deposit of new formed bone in such position as to interfere with joint movements, particularly if the line of fracture should extend into the joint. In such cases, we have in addition to the difficulty of retaining the fragments in position, the mechanical difficulties arising from the new formed bone, especially if it should appear in excess in or about the joint, together with the adhesions which are liable to form. This will suggest very emphatically the necessity of early movement of the joint, even at the risk of delaying union of the fragments. The effects of movement while yet the nutritive processes are active, will have a marked influence in maintaining the joint surfaces in

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a normal state. If, however, the new formed bone becomes solidified and the nutritive processes have been nearly or quite completed, the chances of overcoming the mechanical obstruction occasioned by the unfortunately placed callus or the new formed joint adhesions, will be much less.

TREATMENT OF COMPOUND FRACTURES.

By Donald Macrae, Jr., M. D., Council Bluffs, Iowa.

IN PRESENTING this paper, I wish it clearly understood that our worthy chairman is responsible for its title, as well as my presence on this platform. Therefore, you may expect an apology from him and not from me. I will endeavor in the following to describe my ideal treatment of compound fractures, from the standpoint of one who has had considerable experience directly and indirectly with the various methods employed. And I am also cognizant of the fact that this subject is not given the proper attention before our medical societies, nor does it occupy in our text-books the space it deserves. It follows, therefore, that the average physician when called in a hurry to see a "broken leg," finds to his disgust that the broken leg is a compound fracture. For a moment he is at a loss what to do. Finally, he has the patient carried to a bed, washes the wound with carbolized water and then applies the ordinary splint for simple fracture, possibly leaving an opening over the seat of injury. If the patient is unfortunate enough to have his injury on the anterior aspect of the part, which is generally the case, it rapidly fills with stinking pus, the temperature goes up, and we have the same old story over again. A consultation is hurriedly held and, to make a long story short, the leg comes off and our patient dies, or possibly recovers. And still, ladies and gentlemen, we learn but little of the treatment of compound fractures, but in its place we hear of nothing but abdominal operations and how to remove a healthy uterus and ovaries without the loss of a drop of blood.

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I say, which is the more important, to save the limb (and possibly the life) of an otherwise healthy individual or successfully remove a carcinomatous uterus from a woman who, 99 chances out of 100, will not survive four years? And yet, in the latter, if the surgeon has held communion with a germ twenty-four hours previous to the operation he is condemned by the rest of the profession as a very careless man.

You will pardon the time I have used thus far when you stop to consider that our patient's limb and possibly his life, depends upon the immediate treatment which must follow. I venture to say that one-fourth of our limbless people have suffered amputation as the secondary necessity following compound fractures. And I further venture to state that a large proportion of these amputations were found necessary as the result of improper treatment.

It has been my fortune or misfortune perhaps, to have treated a number of these cases some days or weeks after primary injury. All of these called for amputation, even resection being out of the question. None of these were treated according to the ideas promulgated in this paper; the physicians in charge at the time of accident did not follow the great principles laid down in modern surgery, which have made the art what it is to-day.

I know the circumstances and conditions surrounding the physicians and surgeons in our smaller towns are not of the best; at the same time very little is necessary to the carrying out of our plans.

Carbolic acid or corrosive sublimate, catgut properly sterilized, a couple of elastic tubes or bands, knife, gauze, cotton, nail or silver wire, saw and drainage tubes, are all that are absolutely needed. Where it is possible I would advise the physician to provide himself with a chain saw and bone drill.

In the following I shall confine my remarks mainly to the extremities, as they are by far the most often injured; however, the same general line of treatment will hold good throughout the entire skeleton.

Compound fractures may be divided, for convenience of description, into two great classes; namely —

First. Those due to indirect, and

Second. Those due to direct violence.

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The first may be sub-divided into

Class A. Where a mere spicula of bone has perforated the integument, and

Class B. Where the entire end of one fragment, or both, has passed through the skin. I will endeavor to describe the treatment of the two extremes, which I have found the most satisfactory.

Of course, the dividing line between a severe indirect and a mild direct fracture is not well marked, it therefore follows that the treatment must be pursued according to the severity of the case, contamination of soft parts, age of patient, etc. All this must be left to the common sense and judgment of the surgeon.

Class A. Sub-division of indirect variety, where a small point of bone has pierced the skin. In this case the simplicity of the treatment must depend upon the exactness with which it is carried out. If a simple punctured opening exists; if but a short time has elapsed since the injury and you have no evidence of infection, with but little or no shattering of the bone, or extravasation into soft parts, be content with cleansing the surrounding parts with 1 : 500 bichloride solution, reducing fracture and treating as a simple break, leaving an opening in the splint over the seat of injury. If a slight oozing persists through the opening, a pad of gauze should be applied and removed in twelve hours. A fresh piece should take its place and be left on for a week or ten days. If instead of an oozing the opening is found plugged with a healthy clot, let it alone and proceed as before. If a spicula of bone projects the best treatment in my opinion is to snip it off, then pursue course as before. In almost all cases this method will give perfect satisfaction. On the other hand, if the case has not been seen immediately, if the bone is badly splintered and the extravasation of blood severe, I would advise the following:

Class B. In this case, with a large opening exposing the fragments and soft parts to almost certain infection, I am a little more energetic in my treatment than most of my brothers, who have written on the subject. Here we have, in 99 out of 100 chances, to deal with a septic wound. The great mistake made by many is, that they treat this class as they do Class A. This is a great blunder which has caused the death of many

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limbs as well as of their owners. Imagine now that our wound is absolutely filled with a poison dipping into every recess and crevice of the wounded part; a poison having the tenacity of a glue, adhering to everything with which it comes in contact. This, in my judgment, should be the picture every physician or surgeon should have in mind while treating a severe compound fracture.

Before giving the anæsthetic the wound and surrounding parts should be thoroughly cleansed with 1 : 1,000 or even 1 : 500 corrosive sublimate or a proportionately strong carbolic solution and wrapped in antiseptic gauze. A temporary splint should now be adjusted and the patient removed to a comfortable place, if not too far distant. It must be remembered that success in these cases is largely due to immediate action. The patient being under the anæsthetic, the part is carefully disenfected. The hands of the operator should now be disenfected for the second time and an elastic band thrown around the limb several inches above and one an equal distance below the seat of injury. This, I claim, is better than the Esmarch run from below up over the wounded part. In the latter the infected blood is squeezed between the muscle fibres and muscle layers, thereby lessening our chances of completely disenfecting the part. With the band above and below the virtues of the Esmarch bandage are retained without the danger of further infecting the limb. This method has the decided advantage of allowing the free seepage of the blood which is retained between the elastics, flushing as it were, the remotest parts of the wound. And lastly, when everything is in readiness and the bands removed, there is a flow of aseptic blood, if I may be allowed to use the expression, into our otherwise bloodless segment.

With our patient under the anæsthetic and the elastics applied, a longitudinal incision should be carried through the seat of injury, laying it completely open. Do not be afraid to cut, rather make the opening too large than too small. Again irrigate with hot 1 : 1,000 bichloride of mercury solution. Every niche and pocket should be split open and drained. All shreds and pieces of tissue liable to slough should be cut away. Any fragment of bone deprived of its periosteum should be carefully removed;

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however, if the periosteum is intact and the piece remains clinging to the parent fragment I would allow it to be left in place. Cleanse parts again, and if the primary wound, or incision, is not at the lowest point, make one in this situation — *mark what I say:* If the original injury be received from behind,— in other words, if it is already in the most dependent position,— well enough, *but*, if not, by all means make a counter-opening at the lowest point nearest the seat of injury. If the pockets extend any distance make two or a dozen counter-openings, if necessary.

The counter-opening I consider (excepting surgical cleanliness) the most important step. I cannot lay too much stress upon it. A compound fracture, unless it be in our first class (A), treated without the counter-opening, has received no treatment at all.

After the counter-openings are properly made, place the fragments in contact and hold in position by means of the silver wire, or better yet, the smooth, four-cornered iron nail made specially for this purpose. In the absence of these the ordinary screw or horse-shoe nail, properly sterilized, will answer the purpose. I do not like the ivory nails because they become decalcified by the action of the carbonic acid in the tissues, the organic portion left behind soon dissolves, producing cavities into which new bone grows. When the nails are used in a transverse break, one may be placed on either side of the line of fracture and a figure eight of kangaroo tendon or wire thrown about them. Catgut absorbs too quickly and should not be used here. Of course, Senn's bone rings are splendid but they are seldom at hand when needed.

The periosteum should now be sutured around, if possible, and then we are ready for the soft parts. These should be united, nerve to nerve, muscle to muscle, etc., as far as possible, by means of catgut, not forgetting to insert the large drainage tubes which should extend to the cleft in the bone and to the different pockets, if there be any present. Where the bone is near the surface and simply subcutaneous, as the tibia, the tubes should be placed below in the counter openings, only packing the interior injury with gauze. The injured member is now ready for the fixed dressing or splint.

In the second division due to direct violence, the treatment to be followed should be about the same as above with the exception

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in severe cases of paying more attention to the bone. In this class there is frequently a loss of substance; the periosteum may be stripped from the bone for several inches. The soft parts about may be crushed to a pulp. Here all crushed parts, hard and soft, should, in my opinion, be removed. A segment should be taken from each fragment if necessary, and the soft parts cut away, the wound turned inside out as it were, the periosteum replaced and proceed as before, unless the opening be very great; then I deem it wiser to pack all parts with gauze or mull and treat as an open wound. The treatment of the several cases by this method will give perfect satisfaction. In this way the dread of "blood poison" is removed. This term should be relegated to the past as far as compound fractures of the extremities are concerned. The only fear now is that the part has been so devitalized that complete union is out of the question. At any rate, where there is a possible chance of saving the part, resort to this mode of treatment and wait.

Compound fractures involving joints should be treated on the same general principles. However, where it is possible, slight extension and counter-extension should be employed, in order to gently separate the contiguous surfaces of the synovial membrane, lessening the chances of anchylosis. The separation of the surfaces also aids the free passage of fluids through the openings and counter-openings.

As to splints, any modern fixed splint will answer the purpose. In the milder forms of this injury the antiseptic plaster of paris dressing is excellent, but when several openings are left in the splint the plaster alone soon becomes weakened at the very point we wish the most strength. Here I would advise the interrupted plaster of paris cast, the two or three portions, as the case may be, being held together by means of the ordinary telegraph wire, carefully bent to conform as nearly as possible to the shape of the part. These should be looped or arched at the intersections. To these arches should be attached cords, which are connected to a pulley or hook above. The whole should then be swung free of the bed and further supported by means of a gutter or hammock swung from the ceiling or support above. This hammock can easily be made of the course screen wire fencing, through the

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openings of which our drain tubes may be allowed to pass. In this way the wound may be irrigated and the tubes cleansed as often as may be necessary, without the slightest disturbance to the parts. In the event of the femur or other parts being injured, where a swinging hammock is out of the question, the mattress may be taken off and a slat removed from the bed at the point where the lower opening of the wound would touch. Blankets, etc., may be placed above and below and the patient with his fixed dressing deposited upon this. It follows, therefore, that the wound may be easily cleansed and at the same time have nothing below to interfere with the free passage of fluids. The bed may be a little uncomfortable but we all know fractures do better on a hard than a soft couch.

DISCUSSION ON FRACTURES OF THE LONG BONES.

By H. E. W. Barnes, M. D., Creston, Iowa.

THE management and treatment of fractures of the long bones has been so thoroughly reviewed by the able gentlemen, that any additional remarks would seem superfluous. The general principle, "to place the fractured ends together and keep them there," is all very well, but alas, in some cases where that is done, the bone refuses to unite. The case of a fractured femur properly reduced and well treated in this vicinity, is a good illustration. After two weeks it did not unite. The ends were rubbed together and the appliance continued. Still no union. The bone was then resected and no union occurred, and finally the patient was forced to submit to an amputation. Here was a case of compound fracture of the femur in a healthy subject, given due and proper diligence, care and skill, that ended in defeat.

In a fractured tibia and fibula in a healthy young man, at the expiration of six weeks, with the ends in perfect apposition, there was only a partial union. I applied a plaster paris dressing and waited. Now, at the expiration of eight months, the union is not

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complete. There is no syphilitic taint in either of the cases detailed. We have all seen non-union in the femur, tibia, fibula, humerus, ulna and radius. I wish to confine my remarks to this phase of the question, because to certain of the laity the failure of a bone to perfectly unite in six weeks argues improper treatment on the part of the surgeon in charge. It is with a feeling of horror that I would speak of the *bete noir* of the surgeon, *i. e.*, fractures involving the elbow joint. Anchylosis is almost certain to follow any and all treatment, as night is to follow day. And all experienced men know this to be true. Most of our text books do not lay stress enough on this matter. In one case that came under my notice, the surgeon was taken into court the charge was made that the injured joint was larger than its fellow, as well as anchylosed. ' The surgeon simply demonstrated that very few elbow joints normally measure the same. From the standpoint of medical jurisprudence the treatment of fractures of long bones assumes gigantic proportions. The greatest number of accusations against the surgeon comes from his supposed mismanagement of fractures of this kind.

This evil grew so great in a neighboring county that the best surgeons refused to treat a fracture unless a bond was given that no prosecution would follow. I speak of this to raise a voice against the despicable practice so often resorted to by the man who in his eagerness to gain what he conceives to be an advantage over his neighbor, is ever ready to agree with the one who accuses his surgeon of improper treatment in the care of a fracture. Fortunately, the standard of medical education is being raised each year, and slowly, but certain as fate and as inexorable as destiny, the time is coming when men who have no surgical education will be eliminated from the profession. A consummation devoutly to be wished.

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REPORT ON PRACTICE OF MEDICINE.

By F. M. Hiett, M. D., Chairman, Red Oak, Iowa.

THE APPLICATION of antiseptics in many of the diseases of the alimentary tract is giving results as satisfactory to the physician as they have to the surgeon in his domain. In the treatment of the respiratory organs, good results are reported in pneumonia from the use of the serum from recent convalescents of this disease, also by the antitoxin serum from animals that have been immunized. This theory, first successfully introduced and demonstrated in a limited way by Jenner, later more fully elaborated by Pasteur, Koch, Behring and others, is giving such results that it must become of universal acceptance.

Reviewing the current literature of the practice of medicine for 1894, we find little that is of recent introduction in either the cause or treatment of disease.

But in noting the advancement along lines that have been followed for the past two or three years, the progress is very marked. In the laboratory of the bacteriologist problems have been worked out that have long puzzled us relative to the etiology of many of the diseases we were daily called upon to treat. With the cause made definitely clear, we are now enabled to rationally proceed in treating our patients, and with a confidence born of positive knowledge. The knowledge of the part micro-organisms play in etiology, the high grade to which physical diagnosis and chemical research have advanced, gives the medical profession just cause for self congratulation.

The treatment of infectious diseases by the antitoxin serum of immunized animals has absorbed the attention of many clinicians and the favorable results obtained are worthy of the fullest credence.

In the treatment of the diseases of early childhood, infant feeding is given a prominent place, as it should be. No other part of the child's management is of greater importance. Professor

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Gærtner, of Vienna, has done much in the solution of the question of artificial food. By the use of the centrifugal machine, or cream separator, the cow's milk can be made to almost completely resemble the human product.

THE PHYSICIAN.

By W. F. Stults, M. D., Wiota, Iowa.

THIS paper will be suggestive, rather than exhaustive, it not being our purpose to go into detail, as the time allotted to our disposal is too short. There are between three and four thousand physicians in Iowa, and only six or seven hundred, or about sixteen per cent, are members of the Iowa State Medical Society. This ought not to be. Sixteen per cent have no right to speak for the remaining eighty-four per cent. Neither do we believe that they correctly represent the thought and practice of the medical profession of Iowa. And of the six or seven hundred who belong to our society, probably one hundred, or three per cent, constitute the number who take an active part in the proceedings of this honorable body, and ten, or about one-third of one per cent, give color to all that which is done. And the physician, partly by reason of his own fault, we believe, has been led to feel that he is inferior to the surgeon, which has caused a twofold disaster. First, medicine does not occupy the advanced position which it should in this state, and, secondly, an increasing number are dabbling in the field of surgery who are *not* surgeons, neither are they ever likely to be. For the *true* surgeon is *born, not made*. Now, taking these premises as being true, what is the cause of the present state of affairs and the remedy? As to the cause, we believe it to be threefold, viz.: Lack of confidence and appreciation on the part of the physician; over confidence and appreciation on the part of the surgeon, and a lack of harmony between the two. And this threefold cause has been the means of the Iowa State Medical Society drifting into a mere political machine, for the personal aggrandizement of a few. We believe the first element in this cause to be due largely to the underesti-

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mation of the physician by the laity, which results in a great degree from its ignorance of the intricate and complex relations of the human body in its component parts. Also, to a lack of discrimination on the part of medical colleges in the past in the selection of their students and to their system of cramming, which last error or fault is happily passing away. Whenever man can be led to see the value of the human body, which is intended as the temple of the living God, then will the office of the physician be elevated to its proper place and dignity. Then will true advance begin and medicine will become a science. The physician will be above all and in all. The anatomist, the physiologist, the psychologist, the pathologist, the chemist and the surgeon will only be the instruments by which the physician will carry on his work. In fact, the very magnitude of the ground which the physician should cover is so great that men content themselves with the magnifying of some of its branches. Surgery, *per se*, on the other hand, is mechanical, and requires the work of an artist, whose product is admired and feasted upon. Medicine is intellectual in its requirements and demands the efforts of a philosopher who wrings forth the exclamation, "behold the man." This first element of what we consider to be the cause, is the ground work of the other two elements. The surgeon is encouraged and stimulated at the expense of the physician and to the detriment of both. For surgery will never attain its sublimest height until medicine gets into its proper place. Surgery must always have medicine, but medicine seldom — comparatively speaking — needs surgery. And no great thing will be accomplished until harmony is brought about between physician and surgeon and between physician and fellow physician. And the latter *must* be accomplished before the former *can* be. And now we have fully introduced the remedy. The physicians of this state must waken up and get together and do such work as will compel the surgeons to acknowledge that they are at least their equals and that their work is equally, if not more, important. Then the two branches of the profession will be enabled to meet on equal terms and mutual benefit, with greatly increased advantages to mankind in general will result. To bring the former about, we believe it necessary to organize a *new* society,

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which shall be *distinctly medical*, for the purpose of doing original special and general work in medicine, whose members shall be well accredited physicians, surgeons and specialists, and who should be enabled to enter directly into the society *without* the intermediate influence of a county or district medical society. This organization should have a *section* devoted to the *general interest* of the *physician*. We believe that in this manner a work could be done that would enable the physician to double his business, drive out in a large degree the empiric and *treble* his *income*. There is a large class of people that need the help of a physician, who are yet able, perhaps, to perform their ordinary daily duties, that are left alone to suffer or are driven to the empiric, simply because the medical profession is not in possession of the standard it should occupy. When it reaches that standard it could and should demand for well recognized difficult cases fees commensurate with the fees charged by surgeons for capital operations. There should be more reading of the standard text-books. There should be greater representation of medical men — who are always welcomed — in the societies which are distinctly surgical. The physician should become acquainted with the technique and ways of the surgeon. The physician should be enabled to comprehend when surgical work is demanded and send for the surgeon or to the surgeon. The surgeon should be acute and honest enough to recognize when medical treatment would better subserve the interests of all and to leave patients in the hands of the physician, when practicable, for such work. Both physicians and surgeons who have the money, the ability and the time, should go to recognized centers of medical teaching frequently, in order that the less favored brethren might avail themselves of the experience thus gained. For it was never more true than to-day that "he who would be greatest of all shall be servant of all." Whenever the two great branches of our noble and honored profession can be brought together on an equal footing with complete harmony existing, then will there be wonderful advances made toward a more scientific basis. But with all this said and done there still remains the question of educating the laity upon the mysteries of medical lore. The ignorance of the masses on questions pertaining to themselves — to the well-being of their own minds and bodies

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—is appalling: and is the greatest barrier to true advance in medicine. Their education will not lessen the work of the physician, but increase it. By education, we do not mean to increase their knowledge of *symptoms* of *disease* and their *empirical treatment*—there is too much of this already—but to help them to *understand themselves*, which will lead to more correct conclusions as to the aid needed. Any physician of merit will do better work, with more self-satisfaction, by having the intelligent co-operation of the patient than to have the blind, vacillating efforts of the ignorant. It is only the unlearned, the deceiver, who prefers the latter class for a clientele. But we must first get the beam out of our own eyes before we can see clearly to cast the mote out of the eye of the laity. It seems to us that one of the best ways to solve this seemingly difficult problem, is to establish a weekly medical newspaper, to be published at the capital of our state, for the especial benefit of the masses, and under the editorship of a scientific and practical physician, who shall at once be big and great enough to grasp all sides of this knotty question; making the subscription of such newspaper as low as that of the secular weeklies.

May a Jenner, a Koch, a Klebs, a Davis, a Bartholow, a Whittaker and a Behring be inspirations to the physicians of Iowa.

MODERN TREATMENT OF DIPHTHERIA.

Walter L. Bierring, M. D., Iowa City.
Professor Pathology and Bacteriology Iowa State University.

AMONG the entire list of infectious diseases there is perhaps not one more dreaded by the average physician or one in which a favorable response to the treatment excites a more grateful appreciation than that of diphtheria, so that it is not to be wondered at that any marked advance in its therapy should arouse the attention of the medical world.

The development of the modern treatment of diphtheria is but the result of the progress of our knowledge of the disease and its etiology. The time is no doubt fresh in the memory of many a colleague when diphtheria was one of the most vague and indef-

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inite of diseases, when a positive diagnosis was an impossibility and uncertain therapy wandered from one remedy to another with no degree of reliability.

Compare this with the status of to-day when we have a disease sharply defined, an etiology definitely established, with a ready means of recognition, a therapy certainly more definite and scientific, all brought about during the last decade, and the rapid advance that has marked our knowledge is plainly apparent. Bacteriological research has played a role in this development and probably demonstrated in this particular more than in any other way that it has risen above the domain of purely theoretical investigation and become indelibly linked with practical advance in medicine.

The etiological significance of the Klebs-Lœffler bacillus has been fully established, but the fact that in post-mortem examinations of diphtheria cases, and in those experimentally produced in the lower animal, the bacilli were only found present at the point of inoculation in the pseudo membranes, and not in the blood or the internal organs, lead to the conclusion that the systemic disturbances which accompany the disease were not due to the direct presence of the bacilli themselves, but more to the absorption of some toxic substance generated by the bacilli at the point of inoculation.

This toxic substance or toxin of diphtheria is likewise produced in artificial culture media, especially in cultures prepared in bouillon, from which it can be separated by means of filtration through a Pasteur-Chamberland filter, the bacilli remaining in the filter and the filtrate containing a large quantity of the toxin.

The characteristics of the diphtheria toxin were first published in the classic contribution by Roux and Yersin in 1888. It is classed with the tox-albumins and its pathogenic characteristics are similar to those of the Klebs-Lœffler bacillus, as inoculation experiments have shown that it is capable of producing the typical changes of the disease, even to the extent of the post-diphtheritic paralysis, without the formation though of a false membrane, thus more thoroughly establishing the etiological connection between the Klebs-Lœffler bacillus and the disease; both by inoculation with the bacilli themselves and the toxins generated by them

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in an albuminous medim, the typical changes can be produced in the lower animal. In the resulting study of this toxin, it was developed that its attenuation was possible by various reagents, and by successive inoculations of gradually increasing doses, or strength of the toxin, an animal could be rendered accustomed to the same, *i. e.*, be rendered immune against its action, and also against any following inoculation with the Klebs-Lœffler bacillus; furthermore, that the blood of an animal thus immunized by the use of the diphtheria toxin contains antitoxic principles, and this, when introduced into another animal body that had previously been inoculated with the toxin, had the property of antagonizing the same, or preventing its action. It was the researches in this direction by Behring and Kitasato, of Berlin, on the properties of the serum from animals rendered immune against diphtheria and tetanus, and published in 1890, that gave to the serum therapy its advent into medicine and formed the foundation of our present treatment of diphtheria — one that promises to be attended by such beneficial results.

In considering the modern treatment of diphtheria, the use of anti-diphtheritic serum, or antitoxin will certainly form an important part of the same.

Formerly the attention of the physician was attracted mainly towards the local lesion, devising some means to remove or dissolve the false membranes or prevent their formation; later, when a better explanation was offered for the systemic disturbances — stimulants and supportive treatment became an important part of the therapy, yet with all our antiseptic gargles and sprays, combined with internal treatment, the rate of mortality tended to be greater than the percentage of cures; hence, when the therapeutical value of the anti-diphtheritic serum was announced, it struck a responsive chord in the medical world that bordered on enthusiasm, although the memory of the unfortunate fate of Koch's tuberculin rather interfered with its adoption for a time.

The thorough investigations regarding the preventive and curative properties of antitoxin in the lower animals have received a most marked corroboration in its use in the human person. The first results being published by Ehrlich, Wasserman and Kossel in

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May, 1894, of the treatment of 225 cases in the Berlin hospitals, with a mortality rate of 24.5 per cent.

Then followed the report of Katz and Aronson of 178 cases with a death rate of 12.5 per cent, and following these came the report of 300 cases treated at the Hopital des Enfants-Malades, in Paris, by Roux and Martin of the Pasteur Institute, during the time from February 1, to July 24, 1894, with a mortality rate of 26 per cent in comparison with the average rate of 51.71 per cent of the four preceding years. The last named cases are of increased interest to me on account of having enjoyed the privilege of being a personal observer of a great number of the same. Another interesting feature about them being the constant comparison that could be made with the Hopital Trousseau in which the antitoxin was not used, the statistics for the corresponding time showing a record of 520 cases with a mortality rate of 60 per cent, demonstrating at the same time that the epidemic was not of a benign character.

Since then it has come into more general use in the hospitals of Europe, been introduced into our own country, been tried in our eastern hospitals with a marked lowering of the death rate, and even in private practice it has withstood the test. The rather high expectations that were entertained for it have been to a great extent at least fulfilled. Thus far we have a record of its use in about 2,300 authenticated cases, with a lowering in the mortality rate of at least 50 per cent over corresponding time of previous years.

I should like to report the result of its use in a certain number of cases in eastern Iowa. Davenport can furnish a case of diphtheria during any month of the year and the cases are generally of a virulent character.

Through the kindness of Dr. H. Braunlich I am able to report the results of its use in sixteen cases treated by him, five of which in consultation with Dr. Henry Matthey, the patients ranging in age from 13 months to 31 years, comprising twelve cases of pharyngeal, two of naso-pharyngeal, one of pharyngeal with extension into larynx, and one of pure laryngeal diphtheria. Antitoxin was applied in the first case (and this was also its first application in eastern Iowa) on February 12, 1895, only one dose of Behring's serum, No. 2, being applied, on account of the lim-

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ited supply, yet the improvement was very noticeable from this one injection, and although a fatal prognosis was determined upon by both attending physicians at the first visit, the case was discharged as cured on the ninth day. In twelve cases the Aronson serum was used in doses of 5 c. cm., and the remaining four the Behring No. 2 was injected in doses of 10 c. cm. Fourteen cases received only one injection, one received two, and one case requiring three injections, the injections being made from the first to the third day of the disease, the point for injection in all but one being in the thigh, the remaining one in the subcutaneous tissue of the breast. Of the sixteen cases there was one death, this occurring in the case of laryngeal diphtheria, which was also complicated by catarrhal pneumonia, death occurring about eight hours after tracheotomy was performed. In one case a slight urticaria occurred at the point of inoculation, but disappeared after a few days. In all these cases as far as it was possible to observe, the recovery was very rapid after the membrane had disappeared; that is, the patient returned to his natural condition in a very short time, and the disease was not followed by any sequelæ. Dr. Braunlich has at present two more cases under treatment, but the result of which I can not give as yet.

I have also been kindly furnished by Dr. Strohbehn, of the same city, with a report of its use in one case of pharyngeal diphtheria with extension into larynx, with a favorable result; one injection of 5 c. cm. of the Aronson serum being sufficient.

I have the indirect report of two other cases of Dr. Henry Matthey and three cases of Dr. Bowman, in one of the latter requiring intubation, recovery taking place in all cases.

Antitoxin was used for the first time in Iowa City on March 2d, in a case aged 17 years, of Dr. M. B. Cochran, in which I was called in consultation for the purpose of applying antitoxin. It was a very marked case of naso-pharyngeal diphtheria — membrane covering uvula, tonsils, posterior wall of pharynx and postnares, with extensive glandular enlargements. The serum in this case was from a bottle presented to me by Dr. Roux of the Pasteur Institute in Paris, and was given in doses of 20 c. c., 55 c. c. being used. The throat was clear on the sixth day and recovery took place without any sequelæ except a slight erythema at point

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of injection, which remained but a short time, the inoculation in this case being made into subcutaneous tissue of the abdomen. Antitoxin has subsequently been used by Dr. Murphy in four cases and by Dr. Mullin in one case with very beneficial results.

In the twenty-seven cases but one death occurred, which favorable results certainly demonstrate that it is a remedy that can be as successfully applied in private practice as in the hospital ward.

During the last three and one-half months the preparation of antitoxin has been in progress at the State University, with the cooperation of my assistant, Mr. L. W. Dean, and Dr. Shrader of Iowa City, who very kindly furnished the horse for the experiment, and I am able to present herewith the first sample of our production. The toxins necessary for the immunization have been produced in the laboratory, bouillon being used as a culture medim contained in the so-called Fernbach flask, which admits the passing across the surrace of a constant current of moist air which greatly enhances the production of the toxins. After a three weeks' growth the cultures are filtered through a Pasteur-Chamberland filter, the filtrate of which you see sample, here—then containing the toxins—the strength of that which was used in this case being that 1 c. c. of the toxin had the property of producing death in a rabbit of five pounds weight in forty-eight hours. Injections into the horse were begun on December 15, 1894, the first dose being ½ c. c. This was gradually increased, averaging about three injections a week, and the last injection was made on April 4, 1895, when 200 c. c. of the diphtheria toxin were introduced, illustrating to what an extent an animal can be rendered accustomed to this poison. The above being an evidence of an existing immunity on the part of the animal, the first tapping of her blood was made on April 9, 1895, when two quarts of blood were withdrawn from the jugular vein without seeming in the least to inconvenience the animal. One flask of this blood is represented here showing the contracted clot in the center, surrounded by the clear amber colored serum, some of which has been drawn off into these bottles and forms the so-called diphtheria antitoxin. Our experiments regarding its strength have not been completed on account of the desire to attend this meeting, but from our progress thus far, we may say

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that its strength will represent about 300 to 400 immunizing units, thus being somewhat weaker than the Behring article No. 1. This will restrict this sample more to immunizing purposes rather than being of therapeutic value, but by keeping up the injections of increasingly large doses for another month we are confident that by the next tapping we will obtain an article of considerable therapeutic value. It is necessary to continually keep up the injections with the toxin, or the antitoxic properties contained in the blood will begin to disappear, and the more resisting an animal becomes to the action of the toxin, the greater is the strength of the antitoxin that is obtained from its blood.

Experience in both the lower animals and the human person has demonstrated that the sooner the antitoxin is applied in a case of diphtheria the more marked is its effect, so that the need of making an early diagnosis is only too evident.

The manner of making a scientific diagnosis is much less difficult than is generally supposed. Aside from the microscopical examination the culture diagnosis is quite simple, since we have in the use of sterilized blood serum a medim by which a differentiation from other organisms is readily made. By obtaining a small piece of false membrane or secretion from the inflamed part, upon a platinum wire needle, drawing the same several times across the culture medim upon three successive tubes, for the purpose of isolation, these then being kept at body temperature for sixteen to twenty hours will show a growth of the Klebs-Lœffler bacillus in the appearance of very minute dots upon the surface of the medim; the affinity that the bacillus diphtheria has for culture media rich in albumen, causes it to appear from twelve to twenty-four hours before any of the other organisms that may be present in the material used for inoculation, and by means of this culture medim (and I hope some central depot may be established where it can be obtained at a moderate figure), by observing the simple rules of bacteriological technique a positive diagnosis can be made within twenty-four hours after receiving the membrane for examination.

Although the antitoxin appears to have a specific action in diphtheria it should not be relied upon as the only form of treatment. The use of stimulants and supportive treatment is always

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indicated, while the application of mild antiseptic solutions to the affected parts in the form of sprays or gargles for the purpose of cleansing and removing any detached membranes, preventing decomposition of same, is certainly very beneficial.

And thus by this combined therapy, with injections of antitoxin of suitable strength, made as early as possible in the course of the disease, we have a method of treatment which has already been productive of such happy results and, with increased experience and knowledge of its characteristics, we have every reason to hope that it will offer us a means of combating this dreaded disease much more effectually than it has been possible for us heretofore, and that it may eventually prove to be the salvation of the younger race.

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TREATMENT OF DIPHTHERIA WITH ANTITOXIC SERUM.

By F. W. Porterfield, M. D., Atlantic, Iowa.

THE subject of the treatment of diphtheria with antitoxin has occupied the attention of the profession so completely for the last few months that the theme has almost become tiresome before it is fairly understood The overshadowing importance of the subject must be the excuse for the widespread and ever-increasing interest in anything that pertains to diphtheria.

This disease is the most relentlessly fatal of any that the medical profession is called upon to deal with. Who has stood in its presence and not realized the utter inutility of the weapons with which he is to enter the contest? The current medical literature,

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and that of the last fifteen years, contains exhaustive essays and prolonged discussions upon this subject, and many vaunted cures and specifics and different lines of treatment; but until this one was presented none of them has stood the test of practical experience. Many children die under any line of treatment, and few get well in spite of any line of treatment, but until antitoxin was discovered I do not believe that any true case of diphtheria ever recovered, where the decisive element leading up to recovery was other than the natural resistance to the disease that was inherent with the person attacked.

The results of clinical experience in thousands upon thousands of cases is the crucial and only test by which we can intelligently judge of the merits of any remedy. And the purpose of this paper is to contribute our mite to the mass of evidence fast accumulating on the subject of the treatment of diphtheria by antitoxic serum, and to get from this society by discussion, an expression of its views. The discovery of the remedy was announced by Dr. Emil Behring, of Halle, about four years ago. It was received with more or less incredulity, but has successfully survived the test of actual use by thousands of practitioners, in almost every civilized country. Several favorable reports were delivered at the International Medical Conference at Budapesth, and the method is now fast being recognized by progressive medical men in all parts of the world as one of the most important and life-saving discoveries in modern pathology.

The production of the remedy, until recently, has fallen far short of the demand, which is coming with growing insistence, especially since the meeting at Budapesth, from every country where diphtheria is recognized as one of the most fatal and persistent scourges of the human race. It is a matter of congratulation to Americans that an unlimited supply of the remedy of the highest character and thoroughly reliable, is now manufactured in this country. And it is also a matter to be deplored that the market is now, and unless legislative interference is had, is likely to continue to be flooded with specimens, open to the suspicion of having been hurriedly and carelessly made, if indeed some of them contain any medical properties whatever.

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On January 1st of the present year I saw a case of diphtheria in consultation with Dr. W. F. Stults, of Wiota. The patient was a female child aged 9 years, who first developed symptoms of the disease three days before my visit. The cervical glands on both sides were enormously swollen, forming a solid mass on either side as large as an orange, and bulging the neck beyond the level of the ears; both tonsils, the uvula and the pharynx were covered with dirty, gray membrane, and the room filled with the sickening odor of diphtheria. The skin was pale, shrunken and parchment-like; eyes glassy and sunken; tongue and teeth foul and heavily coated; the mind clouded, the urine loaded with albumen; pulse 120, weak and thready; temperature 102.4. The whole case presenting the characteristic picture of profound asthenia. At 2 o'clock in the afternoon fifteen cubic centimetres of the diphtheria antitoxin manufactured by the New York Pasteur Institute after the method of Roux, was injected into the lower right side, into the cellular tissue.

CASE 1—A. B.

7 P. M. Temperature 101, pulse 120; membrane began to whiten.

January 2, 3 A. M. Temperature 99.4, pulse 116; 10 c. c. antitoxin; throat more swollen; deposit whiter.

January 3, 9 A. M. Temperature 99.5, pulse 128; glandular swelling less, membrane whiter.

January 4, 7 A. M. Temperature normal, pulse 118; swelling on left side disappeared, and on the right side diminishing.

January 5. Temperature normal, pulse 96; membrane loose, largely diminished in extent.

January 6. Condition of patient weaker; membrane increased in extent; skin clammy; temperature normal; 15 c. c. antitoxin.

January 7. Cervical swelling gone.

January 8 and 9. Pulse and temperature normal; patient reported convalescent.

January 10, 10 A M. Patient suddenly became cyanotic, and in spite of every effort heart paralysis rapidly developed, with death twelve hours later. Nasal and throat irrigations, with boracic acid solutions were used throughout the entire treatment.

CASE 2 — F. J.

Age 3; developed diphtheria 2 P. M., January 6; deposit on both tonsils and pharynx, epistaxis, and convulsions. Temperature 104.4, pulse 170.

January 7, 10 A. M. Five c. c. Roux antitoxin (all that was at hand); iron, alcohol and strychnia, internally.

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January 8. Ten c. c. antitoxin.

January 9. Glandular swelling subsided; deposit gone.

January 10. Temperature normal, pulse 96. Patient discharged, cured.

CASE 3—V. J.

Age 5. January 11. Developed diphtheria on evening before. Had been having sore throat for some five or six days previous, which had been treated with chloride of iron and chlorate of potash locally, and calomel and quinine internally.

January 12. Fifteen c. c. antitoxin; ordered boracic acid wash, iron, strychnia brandy internally. In this patient there was a raw surface on the palm of the hand, the result of a wound, which became covered with diphtheritic membrane. This patient continued steadily to improve until the 17th, when symptoms of a relapse occurred, and ten c. c. antitoxin were again injected; after this the case progressed steadily to convalescence, and recovered completely.

CASE 4—M. C.

Age 7. January 18. Developed diphtheria on the evening of the 17th. January 19th injected 15 c. c. antitoxin; throat sprayed every hour with antiseptic wash.

—10 P. M., 10 c. c. antitoxin.

January 20. Pulse, 100; temperature, 99.4. Sits up in bed and plays with some toys. Membrane not diminished in size, but is a creamy white, loosened at the edges; takes milk and whisky freely; has had 20 drops of iron every four hours, 1-30 of a grain of strychnia every six hours.

January 21. Glandular swelling and membrane gone; temperature normal, pulse 100, weak and irregular; increased strychnia to 1-20 every four hours.

January 22. Heart symptoms gone. Patient discharged cured.

CASE 5—C. L.

Age 3½ years. March 5th. Developed diphtheria 4 P. M. Temperature 103.5, pulse 150.

March 6. Seven c. c. antitoxin.

March 7. Eight c. c. antitoxin.

March 8. Deposit nearly all gone; temperature normal, pulse 96.

March 9. Patient convalescent. Used iron, strychnia and alcohol through the entire case.

CASE 6—E. L.

Age 17 months. Developed diphtheria March 6. Three c. c. antitoxin.

March 7. Five c. c. antitoxin. Glandular swelling in membrane diminished.

March 8. Swelling and deposit all gone.

March 9. Discharged patient.

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CASE 7 — E. J.

Age 11 years. March 27th. Developed diphtheria five days before. Cervical glands enormously swollen. The nose, naso-pharynx, pharynx, tonsils and uvula covered with a dirty black fœtid membrane; tongue and teeth foul. Case thoroughly characteristic of profound septic absorption.

— 9 o'clock P. M., injected 15 c. c. antitoxin. Twelve hours later 10 c. c. antitoxin. The medicine apparently made no impression on the case; the patient sank steadily, and died eighteen hours after the first injection.

I think even in this brief series of cases something can be learned by which subsequent cases might be benefited. Given another case like the first one, I feel confident that with the knowledge we now have of the remedy and what to expect from it, that the result might be different. In the first place I should continue to give the remedy every twelve hours until I was sure that the diphtheritic process had stopped, instead of quitting with one bottle, as we did in this case, being led to this course by the earlier reports, which were all that were at hand at that time. In the second place I would give strychnia, iron and alcohol in generous doses and continuous until my patient was out of danger, and thus try and anticipate heart and other paralyses, instead of waiting until the emergency had arisen before attempting to treat it. Like every new discovery, its enthusiastic supporters have claimed too much for antitoxin and, in this way, a really meritorious article is placed in the position where it might fall undeservedly into disrepute.

Any complete treatment for any pathological process in order to be successful must accomplish two things,—*first*, it must arrest the process and stop the damage that is being done; *second*, it must repair the damage that has already occurred. The first of these indications is, I believe, perfectly fulfilled by diphtheria antitoxin, but I feel sure that it can have nothing to do with the second. In many of the cases that we are called upon to treat so much damage has been done before the patient is seen that this latter indication is the much more important of the two. For this reason I do not think that I shall ever neglect to use every effort to sustain and restore the crippled conditions of the blood and nervous system found in every case of diphtheria. Nothing more surely accomplishes this result than the continuous and heroic administration of alcohol, strychnia and iron. The local use of the boracic acid or some other bland and antiseptic wash is on no

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account to be neglected, because of its cleanliness and the comfort that it gives the patient, especially in those cases where the membrane has invaded the nasal cavity. In three cases, namely, cases two, three and five, urticaria and erythema were observed. The itching due to these manifestations gives the patient a great deal of discomfort and adds to the difficulty in the management of younger children, but can be controlled in most instances by McCall-Anderson's dusting powder, consisting of camphor, oxide of zinc and starch. These phenomena do not, as has been supposed, indicate impurity in, or faulty manufacture of, the remedy. On the contrary it is an indication that the serum's antitoxic power is of a high grade, and is probably due to the action of the serum that is left over after all of the affinity for the disease that is in the blood has been neutralized. Another manifestation that was observed in every one of our cases, and which I have never seen mentioned, is that of pain at the seat of injection. This pain was not observed until some hours after the injection, and its severity seemed to bear a direct proportion to the violence of the attack. As the cases improved, the pain at each succeeding injection became less and less, but in every case where there were indications of a relapse, the pain at subsequent injections became worse. My attention was first called to this by Dr. Stults. The last case was, of course, hopelessly crippled by the diphtheria poison before it was seen and was, I think, one of a type of cases often seen not only in diphtheria but in other diseases. I believe that in many patients we find what I call a septic diathesis; they seem to be peculiarly susceptible to septic processes of all kinds; some puerperal cases for instance, will rapidly develop profound septic symptoms and, in spite of every care, will quickly end fatally, while others with, apparently, a more severe infection, will hardly be disturbed. And so it is with diphtheria cases. Some will be found with the septic diathesis, and will without warning, and in an incredibly short time, get into a profound asthenic condition for which absolutely nothing can be done. These are the cases that are called malignant; but I think that the condition of the patient, and the amount and character of that unknown quantity (entity or non-entity, I know not which), the affinity in the system for the disease, has more to do with the

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severity of an attack than does the quantity or the virulence of the infection. This point seems to me was proven by vaccination for variola.

The conclusions, therefore, which we deduce from our experience, are,—

1. Antitoxin is capable of arresting the diphtheritic process.

2. The earlier it is given the greater will be the probabilities of success because the damage which will have been done to the system will be proportionately less.

3. It has no power to rebuild or restore damaged tissues.

4. That strychnia, iron and alcohol, with the local application of boracic acid or other antiseptic wash, together with judicious nourishment, should be commenced early and persisted in until convalescence is thoroughly established.

DISCUSSION.

H. L. GETZ (Marshalltown): There is no question but what the rational treatment is to destroy the element producing the poison. If this were done thoroughly there would be less need found for anti-toxin. I have for many years advocated the use of tincture of iron, diluted, for local treatment of diphtheria, and have personally found in it a remedy that may be relied upon almost invariably. The judgment of the physician needs to be used in dilutions, using it from one-half strength to full strength, carefully applied to the membranes. It seems to me that in the one instance you destroy the very elements that produce the poison, and in the other instance you seek to remove the difficulty after it has developed. For twenty years I have used the tincture of iron in the treatment of diphtheria, and I want to say that my faith in it to-day is as strong as my faith in any other remedy in any other disease. In difficult cases it has been necessary to use it very liberally — internally, progressively increasing the dose as the stomach would bear it, and I will say that in many cases I have been astonished at the results when the cases have seemed to be past the expectation of recovery.

Now I use the tincture of iron diluted in simple syrup, and I find that the best way to encourage the toleration of the stomach,

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and intolerance of the stomach is what you get when you come to large doses; you will have pain in the stomach and vomiting, but if you dilute it sufficiently in simple syrup you will be surprised at the large doses you can give. In extreme cases I sometimes find it necessary to carry this treatment to the extremity, and while other treatment might be as efficacious I pin my faith to and rely upon the tincture of iron. I very much regret that I did not hear the paper read upon this subject this morning, for I find it a very interesting one, and while we are perhaps just entering upon a wonderful ocean of knowledge upon this subject, we need to carefully look to what we are doing.

C. B. POWELL (Albia): I am quite sure from a somewhat extended experience with tincture of iron taken in connection with strychnine that it will give as good results as we can obtain from these internal remedies.

As suggested and advocated by Dr. Getz, I believe that where used internally it should be used in simple syrup, as its effects will be much better than where used in aqueous solution. I think its action is better. With such old and tried remedies as iron and strychnine at hand, which have given such good results over and over again, I think the profession should go pretty slow to take up new remedies until they have opportunities for thorough investigation.

G. WALTER BARR (Keokuk): It seems to me that there are exactly three elements in the case: *First*, the microbe which produces the toxin. *Secondly*, the toxin which acts somewhat in the nature of the alkaloids, and poisons the patient. *Third*, the lack of resistance in the patient.

I was especially struck by one paper read here this morning by the credit which was given strychnine in these cases. I am very glad that the profession is coming to appreciate more and more every day the value of strychnine in all cases where we have death from depression of the nervous system. I am quite sure that no treatment for diphtheria will be very successful unless some energetic means are taken to hold the patient up until the disease can be cured. On the same theory I am quite sure that strychnine is quite as valuable a remedy as antitoxin. I am a conservative and am not quite ready to think the millennium has

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come because we have antitoxin, yet I think we should not lose sight of these three elements, and I am very glad that one of the gentlemen places so much stress on strychnine. I think strychnine combined with antitoxin treatment will prevent very largely those deaths which come after the patient has been cured of diphtheria. The patient has got well apparently and the doctor is congratulating himself and the patient's friends upon the recovery when suddenly the patient dies from lack of proper action of the heart. This difficulty, I think, may be prevented by the use of strychnine, and without taking in any way from the laudations of antitoxin, yet I rise to still farther emphasize the value of strychnine in connection with the treatment given this morning.

DR. MIDDLETON: I do not think it is necessary to have any trouble about the use of iron and nux vomica, notwithstanding the use of antitoxin. I am sure that the most of us are weary of the specifiic in diphtheria. We have had in my town some little experience with antitoxin which I think I will relate. We were skeptical and conservative, and in what I have to say I am not assuming to give my own personal experience, because I have not had a case of diphtheria, but three of my neighbors have used antitoxin, and out of twenty-three cases there was one death. I would not adduce these as a foundation for statistical elaboration, but I know they were cases of diphtheria. One was a child that lived for five or six days with a tube after tracheotomy. Of course there is diphtheria and diphtheria, some more virulent than others. I think I have seen diphtheria with a mortality of less than 10 per cent, and some with a mortality of over 75 per cent, but this is better than even the 10 per cent and we think we have found something that is a success.

DR. J. M. EMMERT: There is one point which none of the speakers have touched upon, and that is whether antitoxin is free from danger. Now, before I should use any of Doctor Bierring's antitoxin, or that of any one else, I should want him to prove to me that the horse was free from disease; that it did not have glanders, or tuberculosis or any of those diseases that horses will have. Now, the price of antitoxin is so high that the probability is that those who go into the business to make money out of it will be very careful about the animals they use to gather the serum

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from, and I see the danger that may arise from allowing anybody and everybody who chooses to go into the manufacturing and sale of antitoxin. I believe that the state of Iowa, and every other state ought to regulate the manufacture of this medicine; I believe it ought to be put into the hands of men who have proven themselves competent to carry on this business, and give us a remedy that we know is aboslutely free from any other disease, so that while we are inserting our antitoxin we may not also be inserting a toxin that might kill the patient.

Now, there is another question about it, and that is that all of the cases of diphtheria are not going to get well from antitoxin. We always become enthusiastic over all of these fads — if this is a fad — we become enthusiastic over these things, and whenever we find that we have failed in two or three cases we lose, unfortunately, not only our enthusiasm, but the entire usefulness of the remedy. It has been proven by some German investigator that diphtheria is a mucous infection, and that antitoxin has very little effect on it. If so, it will have no effect except that produced by the bacilli, or the patient may die from the diphtheria, and still not die from the toxin produced by the bacilli. If it is a mucous affection it will have no effect except that produced by the bacilli.

We must remember also that the patient may die from some other infection, and not blame the antitoxin for not curing the patient. But the question which I wanted to bring out, and which I hope some of the other gentlemen will do, is as to the effects of this antitoxin when not prepared in the proper way, and by the proper parties, and from animals which have been proven to be entirely free from any other disease. Let us know after we have introduced the antitoxin into the child's body whether it has done wonders in the way of a cure, or should the patient die we want to know whether antitoxin has killed that child, or whether diphtheria killed it. I believe this is one of the most important questions before this society.

DR. BIERRING: Although much depends upon destroying the local lesion, because it marks the point of infection, yet I doubt whether any local treatment at that point would have any effect upon the toxins which have already been absorbed, or upon the existing toxæmia. One point more in regard to the question

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brought out by Dr. Emmert regarding the danger connected with antitoxin. I will say that the horse I used was only taken after the most careful inquiry regarding any diseased condition, present or historical, and every precaution taken all the way through in preparing the serum. Another point for the toxin is that I assure the physicians of Iowa that it will be used in very large doses on myself before being given out, to see that there are no poisons in it. I should like to see the state take hold of the production of antitoxin. I should be willing to offer myself to prepare the same with no idea at all of deriving any personal benefit from it. I should like to get enough of an appropriation so that the antitoxin could be procured by the physicians of Iowa at such a cost as will simply pay for the bottling and the slight expense of preparing the same. If it might be properly presented to the board of regents of the State University it might influence them to appropriate an amount so that the profession of Iowa could get the remedy at a nominal cost and which they could feel sure had been thoroughly tested before being sent out.

The serum shown is perfectly sterile, having been withdrawn by means of a sterilized trocar directly introduced into the vein, and carried through a sterilized tube into a sterilized vessel, so it is perfectly free from organisms. The serum of the horse affords a poor culture ground for bacilli tuberculosis; but it is a very good culture media for the baccillus of diphtheria. That is another point in favor of the serum of the horse.

DR. PORTERFIELD: There is not much left to be said on the subject. I think, perhaps, if Dr. Getz had heard what was said in the paper about the treatment of diphtheria he would not have said what he did.

It was not advocated that antitoxin was to take the place of any other remedy, but was in addition to it. No sensible physician will ever give up the use of iron and strychnine until he has found something better to take their places, which antitoxin does not, nor claim to. All I think antitoxin does is to stop the processes of diphtheria and whatever damage has already been done must be corrected by some other means. I know that iron given internally is administered with good success, and the size of my dose is only limited by the tolerance of the patient's stomach. I

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give it sometimes in glycerine and sometimes with syrup. I do the same with strychnine. I should not be afraid to give one-fifth grain of strychnine. I believe that no physician does his duty who does not do all of these things.

INTUBATION OF THE LARYNX.

By D. W. Smouse, M. D., Des Moines, Iowa.

IT WILL be seen by the program that my paper is classified with those under the title of diphtheria; and I presume it was the first thought of the secretary that it was for a complication of this dread malady that this part of the surgeon's art was most frequently called into use.

It is most unfortunate that our profession apparently has to be led by fads, styles and so-called hobbies; they come and go like the swinging of a pendulum, and you have all observed that they are not confined to the illiterate and uneducated, but a large percentage of our most cultured physicians are among the leaders who set the examples which are so eagerly followed by their admirers. The man in the community who has an opinion of his own, be that right or wrong, always commands respect, yet he is very apt to be severely condemned if he dares to transgress from the well-worn path or does not keep strictly up to the latest fad.

We have evidence in history to show that intubation of the larynx was taught and practiced at different times for centuries past, but no well authenticated history was given until that by Dessault in 1801; and, as the time did not seem to be propitious, it was soon forgotten.

In 1854, Dr. Horace Green, of New York City, again called the attention of the profession to intubation; but, as his professional conduct was, I suspect, something after what they would have you believe the Polk county style, his ideas could not be accepted nor followed.

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M. Bouchut, of Paris, in 1858, exhibited to the Academy of Medicine cylindrical tubes for the larynx, and demonstrated their practicability, as against tracheotomy.

Trousseau, then the leading laryngologist of the world, opposed the method so stubbornly, that the committee appointed by the Academy to investigate its usefulness, reported it to be impracticable and worthless, and many hundred lives have been lost through the simple opposition of a jealous antagonist; for, from that time, 1858, until about twenty-two years later, intubation lay dormant, when Dr. O'Dwyer, of New York City, with his inventive genius saved the life of a patient in the Foundling Asylum. At this time Dr. O'Dwyer knew nothing of the methods or devices proposed by Dessault, Green, or Bouchut.

His first case was saved simply by the use of a catheter introduced through the nostrils of his patient, but the most troublesome feature was to prevent the patient from pulling it out, as he could readily reach it unless his hands were tied. O'Dwyer stimulated or encouraged by his success, soon produced a short tube with a shoulder at its head so shaped after the larynx, that the shoulder would rest on the ventricular bands and allow the epiglottis to close over the opening of the tube.

He spent much time in experimenting with the tubes; and shortly after its introduction to the profession, many different styles and shapes of tubes were suggested from all parts of the country; but to-day the tube in general use is almost identical with his first completed designs.

One of the first and greatest objections to the tube, at the present time, is the difficulty in swallowing without particles of food or drink passing through the tube into the larnyx and causing violent paroxysms of coughing, often frightening and weakening the patient and sometimes dislodging the tube. To overcome this difficulty Dr. Waxham, of Chicago, who, perhaps, has introduced the tube oftener than Dr. O'Dwyer or any other man in the world, experimented for a long time with a false glottis of rubber, which he used for a time, but I think he has now abandoned it entirely.

Another tube, much larger and longer, has been devised and is generally used in cases where the membrane extends lower down into the trachea, often beyond the reach of the ordinary tube.

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This larger tube is not intended to be retained but a very short time,—in fact, just long enough to spread the tissue and to assist in loosening and detaching the false membrane, thereby enabling the air to enter with more freedom.

The one thing proven beyond any doubt is that the tubes will relieve stenosis in the larnyx ; and experience has shown that the presence of the tube is fraught with no more danger than the wearing of an artificial plate for the teeth in the mouth.

As to statistics in regard to intubation, medical literature is by no means found wanting in this particular ; and a careful study of it will soon convince a reasonable mind that it is not reliable. One operator will insist on intubating every case with which he comes in contact, no matter how slight the dyspnœa, or whether from spasmodic or slight swelling of the mucous surfaces ; another insists on always waiting until there is marked stenosis, with retraction of the intercostal spaces and evidences of imperfect filling of the air cells, and after emetics and other relaxing agents have failed to give relief. It is very evident that a very great difference in the percentage of recoveries in two such operators would be shown, but yet both operators might be equally as skillful and expert in the use of the tubes. Then again, the nature of disease from which the patient is suffering, and the manner of its treatment has infinitely more to do with the number of recoveries than the skill of the operator in the use of the tube.

In true pseudo membranous croup, which is a disease the germ or ptomaines of which produce little or no systemic infection, and where the membrane is confined solely to the larnyx, the proper and timely use of the tube should save every case. Fully one-half of the cases I have been called to intube were diagnosed by the attending physician membranous croup, and in only three cases out of a hundred have I failed to find membranous deposits on the fauces, with evidences of systemic poisoning due to the diphtheritic germ, and during the last year and a half reports from the New York City bacteriological laboratory, the most extensive and accurate we have, show that eighty-eight out of every hundred cases of membranous larnygitis are due to diphtheria.

The statistics, then, as to the number of recoveries from intubation in diphtheria is dependent entirely upon the malignancy

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and treatment of the disease, the operation only being called as a means of relief for one of its complications. The first few hundred cases reported showed but slight variation, it being from 25 to 40 per cent in different parts of the country, evidently depending upon the malignancy of the disease. Later on, there was a marked improvement in the number of recoveries; this was thought by many to be due to the increased skill of the operators, but there is no doubt in my mind of the fact that physicians and the public had become more familiar with the operation, and seeing the ease with which it was done, the instant relief it gave, and the wonderful comfort with which almost all the patients could wear the tube, did not delay, as was the former custom, until every other means had failed and the patient was in a moribund condition before the tube was allowed to be used.

I have up to the present time intubed one hundred and two cases, doing my first intubation in 1888; and, during the three years following, I intubed sixty patients of which sixteen recovered; since that time I have intubed forty-two with twenty-six recoveries. I feel confident that a number of those I have intubed would have recovered without the use of the tube, and I feel equally as confident that in no case has the tube done any harm except the slight difficulty of deglutition, which can always be remedied if the nurse or attendant uses the proper care. The past year but one case died out of eight intubations; the results were entirely due to the mildness of the disease, although in every instance but one, the stenosis was very severe.

You will observe that I have done a relatively less number of intubations during the past two years. This corresponds with the number of cases of diphtheria that have been reported to the board of health in my locality. These statistics illustrate the well known fact that some epidemics of diphtheria have a marked tendency to attack the larynx, the reasons for which it is not the province of this paper to discuss.

All but four of the cases I intubed were at the request of other physicians. I have intubed thirty-two patients for Dr. James T. Priestley, and as the doctor has had the care of these cases from the beginning to the end of the disease, and is a very close observer who watches every symptom of his patient, it has been

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no small source of gratification to see the increased confidence with which he holds the operation. For one physician I have intubed ten patients without a single recovery ; for another, officing in the same block and necessarily practicing in the same community, I intubed eight patients of which six recovered. Now this was not all luck nor merely a coincidence ; it was just as plain to me as daylight—in fact, it would have been very strange if the results had been otherwise.

Your first conclusion would be that these men gave their cases entirely different treatment. In regard to this I have to say their treatment was almost exactly alike, so far as medicine was concerned, but it was entirely in the manner of carrying out the details and attending closely to the patients.

It reminded me very much of a game of billiards, in which two players, both of which seemed equally skilled, using the same balls, cues and tables, and having equal advantages, yet one is always the winner, in spite of the fact that the loser was the most daring and brilliant player, making the most difficult shots and longest runs. Proving that it is not the brilliant and showy player that always wins the game ; it is more often the reverse, especially where the results of the game depend upon the science, care and skill of the players.

Another illustration is the homely and familiar one of the tortoise and the hare. This illustration is made to show that a little difference in the management of cases, even where the same medicines are used, will produce such a vast difference in the final results.

Anyone, who has had even a limited experience in diphtheria, or in the many other dangerous diseases of children and adults, is perfectly familiar with the slender thread upon which life so often hangs for hours and how, very often, it was the close attention to the smallest details that saved the life of the patient.

Many object to the use of the tube, as was mentioned before, because of the difficulty in deglutition, This is not always encountered ; I have had many patients who could take their nourishment while sitting erect without the slightest coughing, due to particles of food or drink dropping through the tube into the larynx. When food or drink cannot be taken when sitting in an

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upright position, it can in almost every instance be taken whilst lying down, or in a position where the head is lower than the body.

Many children find it very easy to use a nursing bottle, older ones drawing it through a tube. In the New York foundling hospital, the child is laid on its back across the láp of the attendant, and the head allowed to hang lower than the body; in this position they find the least difficulty in feeding the children. Solid or semi-solid foods are much easier swallowed—such as corn starch, whipped cream, gelatin, meat pulp, and soft eggs with bread or crackers.

The objection theoretically raised by some, that the tube covers the membrane and prevents local treatment, is of little consequence, as local treatment in the larynx is very unsatisfactory. The inside walls of the larynx do not admit of such absorption, as they are poorly supplied with lymphatics, so that sepsis from this source is not of much danger.

It is hoped, and from my recent experience I firmly believe, that antitoxin when given in time will counteract any systemic infection from the diphtheric germ.

Another very important objection to the use of the tubes is the necessity of having a full set of instruments for their introduction and extraction, and a certain amount of knowledge of the use of the tubes. Now the average practitioner does not have more than three or four cases a year which require intubation, and it does not pay him to purchase an expensive set of instruments and take special instruction.

Dr. Waxham says truthfully, it requires a certain amount of dexterity in order to become expert in the operation; he also says the operation should be performed by one or two persons in a certain locality or within a certain territory; but I think with my friend, Dr. Von Klein, of Cleveland, that it should not be considered in the class of capital operations. Anyone, with a fair amount of skill and dexterity, can very soon learn to do the operation.

If you are fortunate enough to be possessed of a long index finger, you will bless the hand that has it every time you place a tube, as I regard this as the most important necessity after the

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brain that guides it. Since you must be able to reach the epiglottis and hold it forward as the point of the tube passes down ; if your finger is short, you will be surprised to feel the larynx retract out of your reach the instant you try to force the tube through the stenosis ; then you are left in doubt as to whether the tube went into the larynx or œsophagus.

Possibly the greatest obstacle in the performance of the operation, and by all means the most painful for the patient and horrifying for the parents of the child to see, is the use of the mouth gag, which, I am glad to say, can be dispensed with in almost every case by the use of the thimble which I show you and which was devised by Dr. H. Von Klein, of Cleveland. It can be made in a short time by any jeweler, and should be made to fit snugly around the proximal phalanx of the left index finger and is intended solely as the gag was—to prevent the patient from biting the finger of the operator.

It requires more skill to know just when the operation should be done than how to do it. The greatest mistake that is made to-day is in waiting too long before resorting to the tube. I have been called to see no less than twenty-five cases, since I commenced to do intubating, where the children were dying of strangulation when I arrived ; and in many of these the little sufferers had fought manfully for hours and some of them for days. They had suffered the most intense dyspnœa. Can there be a more heart-rending scene than to witness this?

It is too often the custom to give emetics and relaxing agents, resulting in weakening the patient at a time when he most needs his strength. Emetics will do in the spasmodic forms of laryngitis, but should not be used in the membranous forms.

The tube should be used as soon as there is evidence of incomplete filling of the lungs at each inspiration, or, as soon as there is retraction of the abdominal and intercostal muscles during inspiration. By pursuing this method, there is little danger of the patient dying of broncho-pneumonia within a few days after the use of the tube as so often happens.

Intubation has, to a great extent, taken the place of tracheotomy, and this it deserves to do to a certain extent, but not to the extent it seems to have reached, for each operation has its

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particular field of usefulness. While they seem to occupy the same ground in many respects, when carefully considered, it will be found that each one has a wide scope for its own particular usefulness. It being a bloodless and painless operation and one requiring but a few seconds time, commends itself at once to the public as being most appropriate for the large majority of children between one and ten years of age.

I will not attempt to go into details, as to the method of doing the operation, as it is laid down in every text-book on surgery now, but will only call your attention to two points in the procedure, which I deem worthy of more careful notice. The first is, in introducing the tube into the larynx where the epiglottis and rim of the larynx is free from membrane, there is little or no difficulty in placing the tube in an instant; but when the whole of the fauces, uvula and epiglottis is covered with a heavy deposit, it is not such an easy matter. The rule I have found that served me best in these cases, is to have the patient's head held straight and facing towards me, and then keep the point of the tube as near as possible in the median line, pressing the point well forward after getting behind the epiglottis before pushing it down.

The other point is in regard to the removal of the tube, which, in the first few intubations, gave me ten-fold more trouble than the intubing. This difficulty has been entirely overcome by simply inclining the head of the patient forward to relax the tissues of the neck, and with the thumb and fingers pressing backward and upward under the lower end of the tube, it can easily be forced out of the larynx when the patient will complete the operation. I have not had the slightest difficulty in a single case in removing the tube since I have resorted to this method.

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MEMBRANOUS CROUP AND DIPHTHERIA—NOSOLOGY.

By Allen A. Rawson, M. D., Corning, Iowa.

THE position taken by boards of health or others in authority that membranous croup and diphtheria are one and the same disease, may be proper enough as a dictum and guard for control of the public and cause others to shun exposure under conditions which may not be entirely settled in ordinary observation, and such restriction and control, therefore, becomes reasonable. Technically, if the same cause originates and is always found in connection with both diseases, formerly separated, described and classified, then my clinical experience does differ from the claim that the two are but one and inseparable in development, course and succeeding results, including treatment and physical effects upon the patient or upon others who may be subject to exposure. Few physicians have had so great experience with membranous laryngitis as will compare with that with diphtheria, and so may easily merge the former into the latter in connection with the far greater prevalence of diphtheria within a period of comparatively few years.

The limited number of cases of croup under my observation during many years have shown a clinical history considerably different from diphtheria, through a more gradual and insidious approach, greater freedom from fever and excitement or visible manifestations throughout the fauces, with less malaise, so deceitful as to delay treatment until near a fatal point, and not including a deposit of exudation extending even into the post-nasal fossa, together with excessive physical sympathies and nervous depression so pronounced in diphtheria.

Fever of croup often is not sufficient to attract specific notice or even confinement to bed, and scarcely the room, and yet the symptom of labored breathing in the primary stage is almost the only one for a few hours to two or three days, when it deepens

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into dyspnœa and concomitant cyanosis, which, in a majority of cases, will close the scene. Diphtheria, with its chilly onset, soon reacts into elevation of temperature, which is usually excessive, with its marked exudate upon tonsils, thence extending to other parts of fauces, becoming plainly an evidence of physical infection and profound morbid influence as a type of a separate and special pathological change.

Croup I have never known to require isolation, for the reason that I acknowledge no evidence of contagion or infection after any exposure of others, old or young, nor have I seen examples of any case in the same family which have given the least apprehension of morbid communication. Complication with diphtheria I have never observed, but if claimed, by symptoms already indicated, a contagious nature and liability is admitted which separates the two and accompanies the latter disease only.

Sequelæ after croup, through poisonous material and influence upon the nervous centers, or upon internal organs, can neither be distinguished nor named, while the frequent destructive tendency of diphtheria is inherent and does not disappear to a point of safety for days or even weeks after its decadence, whether it be mild or serious in character.

Croup is a sporadic disease and epidemics, if there be any, have not been known in the form and relentless subversion of physical constitution and mental sensibility that diphtheria wages upon its victims to the permeation of whole families, sparing scarce any in some particular locality, as if to unsettle the question of contagion, whether it be a superior factor or only a cyclone of epidemic influence, to which that of contagion is subservient. The clinical history of the two diseases does separate them nosologically, notwithstanding the laboratory of the bacteriologist struggles to unite and seems to occasionally connect them.

Examination by the latter cannot be received at this date as more than approximate, and is not to be accepted as conclusive and wholly in opposition to experience of generations, at this, the present, time. The vast progress in medicine, so called, is but too often, and lamentably at that, merely a change, with much less advance in specific knowledge which opens up superior results of

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treatment than is warranted through the hasty assumptions of competitive investigators and accepted by an enthusiastic fraternity.

Page after page to discuss new light of specific character, and still the almost certain fatality of the one remains while the other is in much greater proportion amenable to treatment. I have known of no second case of membranous croup in the same family, while diphtheria seldom spares the extension of its morbid influence.

A few words in conclusion:

Clinical experience will not be arbitrarily excluded by obstinate theory of specific germ.

The Klebs-Lœffler bacillus has been repeatedly found in persons of normal health.

In some cases, called diphtheria from local appearance and general symptoms, there was no specific bacillus found, though in part fatal.

By one authority, in 200 cases of apparent diphtheria, one-third gave no Klebs-Lœffler bacillus, but did not present other varieties.

If more than one kind or variety of germ is found in diphtheritic attacks, the identity of one cause and effect is rendered doubtful or lost.

In support of the foregoing can be cited the *Journal of the American Medical Association* for March 23d, 1895, besides other dates during the year previous, though I am relying upon personal observation.

Session Iowa State Medical Society, Creston, Iowa, April 17th to 19th, 1895.

DISCUSSION.

DR. RAWSON: Mr. President, there is one thing I would like to mention. I do not understand the action of the State Board of Health to imply that the two diseases, diphtheria and membranous croup, are identical, but only to imply that when diagnoses are made that, for the safety of the people, they should be treated identically in the matter of quarantine. I know that cases have occurred in my section of the state where the physician, for the sake of keeping the family from being quarantined, have diag-

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nosed the cases for the purpose of avoiding the quarantine. Therefore, I approve of the action of the Board of Health in that matter.

DR. EMMERT (Atlantic): I want to say one word, and that is that I hope this paper, or a synopsis of this paper, will not get into the press of this city or the newspapers of the state with the endorsement, or the supposed endorsement, of this society. If it does it will do an incalculable amount of harm. Now, the State Board of this state and other states have had a great deal of trouble with this disease, membranous croup. You cannot get people to understand that it is necessary to quarantine, because a great many physicians do not believe it is contagious. We had to arrest one man in our town because he refused to quarantine. Afterwards Dr. Porterfield and myself operated on another case of diphtheria and he was discharged and I discharged myself, because we quarantined a case of membranous croup. Then another child took with it and died — two out of the same family — so I say, these matters are all right to be brought up here and discussed by this society, but I do not think it ought to go out into the public press, for you cannot tell how many children may lose their lives by such discussion in the press. It is hard to get the people to understand that membranous croup may be, and usually is, diphtheria. It has been proven that three-fourths of all cases of membranous croup are diphtheria. Had we not better quarantine all of them?

DR. FIELD: Had we not ought to adopt a resolution now that it is the sense of this society that the term, "membranous croup" ought to be abolished now and for all time, and that another term should be used as "diphtheria laryngitis." If the society will do this now, or at some other time, it will fully cover the ground Dr. Emmert desires to cover. I am sure it is very much needed.

DR. PORTERFIELD: I only want to say a word regarding the case given by Dr. Emmert, showing how much damage can be done in a community by a misapprehension or misunderstanding, either on the part of the physician or the laity, that there is a difference between these two diseases. The child that we operated upon had been sick one week, and its mother had been in the

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habit of taking it in its baby buggy to the office of the physician for treatment until after the seventh day, and when she came to me I was astounded ; I became frightened and told her I did not believe I could do anything for the child, and that she had better take it home and get some other doctor. I had barely time to get to the office and get Dr. Emmert and place a tube into the child's throat. That child was paraded about the streets of our town for seven days in that condition, for the reason that it had been diagnosed membranous croup. It was given to one other child, which eventually died, too. If the State Board of Health, in their ruling, did not intend to be understood as saying that membranous croup and diphtheria are identical, they ought to say so. That is what I hope their judgment is in the matter. I do not think there is any difference in the two diseases one time in a thousand, and if so the difference is so slight and fraught with so much danger that it never ought to be thought of.

DR. ROBERTS (Osceola) : In thirty years' practice I have never heard a physician say that he ever heard of membranous croup being contracted from another person. I have never known of a single person catching membranous croup from another one. If the object of the State Board of Health is to prevent contagion what do we want to quarantine non-contagious diseases for? What benefit can be obtained from it? Why not quarantine pneumonia? I have seen as many as six cases in a single family.

DR. HORNIBROOK (Cherokee) : It has occurred to me that the question of the identity of membranous croup and diphtheria is open for discussion. Let us have it, so far as can be, definitely settled. We might as well say that because occasionally we find a case of tuberculosis and cannot discover the bacillus that we haven't bacilli in cases of consumption. The scientists have proven beyond any question that you have the same bacillus in membranous croup and diphtheria. The relation is obvious ; the diseases are the same or identical. If one is contagious, the other must be. I can recall a large number of cases of membranous croup spreading from a case of membranous croup, and a large number of cases of genuine diphtheria spreading from a case of membranous croup. While I state this, and state it thus strongly, I entirely agree with the writer of the paper when he

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says that there is a clinical difference in the symptoms of croup and diphtheria. Membranous croup is very apt to be endemic. I recall the treatment of thirty-two cases in one little village, all of membranous croup, without having a single one of pharyngial diphtheria, and the percentage of deaths was over fifty. When their friends came to see them from the country, some of them ten or more miles, they went home and had genuine diphtheria. I think it is as well proven as anything can be proven that the poisons are identical, and that the danger of the spreading of genuine diphtheria from membranous croup has been so well established, and the question is so generally accepted by the thinking members of the profession, that the proposed resolution is unnecessary.

DR. GRAHAM (Atlantic): When I hear of a case of membranous croup I feel like saying to my informant in the language of Dr. Fenger, of Chicago, "It may have been membranous croup, but I did not see him."

Discussion closed.

THE GENERAL PRACTITIONER.

By Rebecca Hanna, M. D., Red Oak, Iowa.

GRECIAN mythology tells the story of Asklepios, the god of medicine, who was the child of Love, the son of the beautiful Koronis and the golden-haired Apollo.

On the death of Koronis, Apollo said, "The child is born to do great things. Bear him to the wise centaur, Chiron, and bid him train the boy in all his wisdom and teach him to do brave deeds that men may praise his name in the generations that shall be hereafter."

So, in the deep glens of Pelion, the child Asklepios grew up to manhood under the teaching of Chiron, the wise and good.

In all the land there was none that might vie with him in strength of body; but the people marveled yet more at his wisdom, which passed the wisdom of the sons of men, for he had learned the power of every herb and leaf to stay the pangs of sickness and bring back health to the wasted form.

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Day by day the fame of his doings was spread abroad more widely through the land, so that all who were sick hastened to Asklepios and besought his help. But soon there went forth a rumor that the strength of death had been conquered by him, and that Athene, the mighty daughter of Zeus, had taught Asklepios how to bring back the dead from the dark kingdom of Hades.

Then, as the number of those whom he brought from the gloomy Stygian land increased more and more, Hades went in hot anger to Olympus and spoke bitter words against the son of Koronis, so that the heart of Zeus was stirred with a great fear lest the children of men should be delivered from death and defy the power of the gods. Then Zeus bowed his head, and the lightnings flashed from heaven and Asklepios was smitten down by the scathing thunderbolt.

In antiquity a temple was built for the worship of Æsculapius and for the treatment of the sick.

But in modern times the sons and daughters of Æsculapius are known as general practitioners of medicine, who visit the sick in their homes throughout all the land.

Although traditionally descended from the gods, yet ever since the destruction of Asklepios, the physician has had many trials and hardships to endure, beside the responsibility of his high calling.

Many of the comforts of home and pleasures of society must be ignored.

Our will must be subject to the will of the people, regardless of time, occasion or condition, and often without hope of reward. "The poor we have always with us;" we also have another class.

> "Among them one — a wife — so ill
> Her husband will 'pay us any bill'"

at our first call, who, at our second visit,

> "When we present our hard-earned bill
> They both conclude she was not so ill—
> That for our counsel and advice
> She wasn't worth more'n half the price."

After days of care and nights of waking our best efforts are often unappreciated, and what we had thought a great triumph

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has proved a sword against us, by the look, tone, word or act, from those who should be our friends.

"He that filches from me my good name, robs me of that which not enriches him, and makes me poor indeed."

The time has long since passed away when silence, a sober face and an air of wisdom are proofs of learning.

We must know the best and latest methods of our art, as well as the stern and relentless facts of our science, and we must carry into the sick room the magnetism of a hopeful heart and a cheerful countenance. They are contagious. "A merry heart doeth good like a medicine," but do not neglect the medicine. While we inspire faith in our patients we must show our faith by our works.

Some people need but little medicine, but if we dispense with medicine entirely we may join in the lament of the doctor who treated Mrs. Rodgers with fresh air and sunlight, whose husband concluded that if God had cured his wife the physician was not entitled to his fee. The doctor says to himself:

> "If ever I doctor that woman again
> I will give her medicine made by men."

Every case we accept as a patient is entitled to our best ability, whether he be a prince or a pauper.

We give a false security when we cover filth with other vile odors and call it disinfection, while we shut out fresh air and sunlight, the universal purifiers.

It is useless to spend half an hour in numerous washings of hands, and then remove the putrid dressings to prepare for an operation. This is an inverted order of disinfection we have often seen. We must have cleanliness, pure, absolute.

It is a reproach to our profession that we are so inefficient in our business methods that we are often unable to meet our obligations. We need to make a united effort to place our business on a better basis and then firmly follow the plan. We cannot command the respect of others until we first respect ourselves.

There is an element of danger in the multiplicity of new remedies and the countless number of medical schools and medical journals, and so many physicians turning specialists, while they still remain general practitioners.

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We cannot convert every patient into a laboratory, for there is always an unknown quantity to be discovered.

Many of the vaunted drugs are not only useless, but positively injurious.

Many of the medical schools and journals cannot attain to great excellence for want of support.

While we honor the true specialist, the great majority of physicians must ever remain general practitioners. It is greater to save a thousand by conservative medicine from various diseases than to save a hundred from one disease.

Physicians are unfitted to do the best work as specialists until they understand the work of the general practitioner.

The general practitioner must observe from every side, his long-continued efforts, the variety of his work and the sudden transitions from one work to another, and the great emergencies of life which are constantly confronting him, necessarily make him on the alert, perception keen, his action quick and his knowledge manifold.

When the germ theory was first accepted the mass of the profession thought if they could find means to destroy the germs then death and disease would flee away.

But some of us considered bacteria harmless so long as health predominates ; that many symptoms of disease arise from autoinfection, caused by the absorption of the poisons produced by the retention in the body of the dead cell tissues ; through imperfect elimination, by secretion, absorption and excretion. In this debilitated condition the bacteria may find a hiding place, forming a nidus for the deadly ptomaines and leucomaines to work destruction.

Many supposed discoveries in medicine have not borne the test of investigation. We might mention Bergeon's gaseous treatment for phthisis, and Koch's lymph for tuberculosis, and Brown-Sequard's method of rejuvenation ; and now we are asked to believe in Behring's diphtheria antitoxin and various other serumtherapy, which still lack proof of their claims as specifics.

It seems to the skeptical that if small portions of various poisons prevent and cure the effects of other like poisons, it is not far removed from the theory of *similia similibus*.

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We admire the earnestness and enthusiasm displayed in these investigations, each one of which brings medicine one step nearer an exact science; these are gropings after light and truth, but not the search-light of truth itself.

In trying to grasp theories, which may prove fallacies, we must not let go common sense and what past experience has proved to be facts. In the future better sanitation and preventive medicine must occupy a larger space in the control of disease.

We must take nothing for granted, but prove all things, whether they be true. Yet we must not be so intensely practical that all the music and poetry are crowded out of life, leaving us ever plodding in the sultry noon-tide with no dewy eve or rosy morn.

We must seek recreation, be it ever so little, outside of our daily toil — in art, literature, travel or some favorite work as a pastime.

It is a necessity of our nature to leave our work entirely, and look upon new scenes and see life in new forms; then we can return to our labor with both mind and body invigorated.

Society meetings bring us together, not alone to learn new medical facts, but by an interchange of thoughts and experience we become better acquainted and learn to concentrate our energies by united effort.

The frailties and foibles which are our common lot will dwindle and disappear, because they will be overshadowed by the virtues and nobility of our profession, and those whose minds are narrow, they cannot discern good from evil, and whose hearts are so racked with petty jealousies "that trifles light as air are to them as proofs of holy writ," if they do not voluntarily leave us they should be banished from us, because they are not of us.

Let us emulate Luke, the beloved physician, and follow in the footsteps of Christ, the great Physician, and let us

> "So live that when our summons comes to join
> The innumerable caravan that moves
> To the pale realms of shade, where each shall take
> His chamber in the silent halls of death,
> We go not, like the quarry-slave at night,
> Scourged to his dungeon, but sustained and soothed
> By an unfaltering trust, approach our grave
> Like one who wraps the drapery of his couch
> About him, and lies down to pleasant dreams."

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ON THE TREATMENT OF PNEUMONIA.

By P. J. Farnsworth, M. D., Clinton, Iowa.

PNEUMONIA is defined as an infectious disease of the lungs caused by a micro-oganism, the *diplococcus pneumonia.*

This microbe is found in the diseased lung and in other parts of the body. The poison that it generates occasions he prostration and other symptoms of the disease.

Admitting this, if we follow the analogy of other diseases of an infectious kind, the cure would be an "attenuated culture" or a "toxine," as in cases of tetanus or diphtheria. This is but the extension of the method discovered by Jenner, and amplified by Pasteur and Koch. At present, immunization and cure by toxins are conditioned; the remedy is not of easy access, and the details require further elaboration. In the meantime we must consider other courses of treatment that have been most successful in this formidable disease. Like other infectious diseases it is self-limited and it ends in death or recovery. Recovery if the patient has strength enough to endure the contest. The poison is met by an antidote existing in the blood or produced there. The poison may also be self-limited by destroying its generators, as alcohol destroys the yeast plant. Treatment in this light is necessary in order to prolong life until the organisms of the disease are overcome.

The expectant plan has been most successful for the disease. Not sitting down with folded hands until the disease has spent its force, but by a careful watchfulness preventing any other factor from entering, and at the same time sustaining the vitality.

The stages of the disease are *congestion*, *solidification*, and *resolution*, after which should come recovery. The onset may be so violent as to overpower the patient, the stasis so general as to fill the lungs and cut off æration, resolution may be delayed so as to invite a new microbe and degenerate into gangrene. The poison may overpower the other functions of the body. Death may occur at any stage. We must proceed carefully with knowledge derived from science and observation.

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Forty years ago when the most vigorous and heroic treatment was in vogue, a German physician of Frankfort reported 95 per cent of cures from the repeated inhalation of a few drops of the newly discovered chloroform. This we recognize as extreme expectant treatment. The profession at the time looked upon it as the fad, or folly of an enthusiast.

Pneumonia was the last stronghold of heroic treatment, and it is only a few years since the expectant plan has been permitted. In the latest work on Practice the author says: "It is a self-limited disease, and runs its course uninfluenced in any way by medicine. It can neither be absorbed nor cut short by any known means at our command." In another place he speaks of the immunity and speedy cure of the disease, produced by the filtered culture of the diplococcus.

Prof. Loomis says pneumonia may be regarded as mild when the temperature is below 104 degrees. When the fever ranges above 106 degrees for two days the case is unfavorable. A gradual rise in temperature after the fourth day is always an unfavorable sign. A low temperature is dangerous only when respirations are greatly accelerated. When the pulse is 120 to 130 for two or three days the prognosis is bad. If the pulse reaches 150, or if it becomes irregular, intermittent or dicrotic, the patient rarely recovers. "Death may occur from heart insufficiency or from asphyxia."

These are the conditions that our treatment must obviate. We must judge fairly of our cases, and adopt the best means for each separate patient. The vigorous and plethoric are frequent subjects of pneumonia. In them the heart labors to pour the volume of blood into the engorged lung, there is high fever and distress in breathing, Nothing gives such prompt relief as free venesection and copious bleeding. There is no doubt but that the crisis is hastened by it. If the patient is enfeebled by age or bad habits, this is contraindicated, or if the disease has progressed much beyond the first stage, it may do injury. Bleeding relieves the breathing, reduces the fever and alleviates the cerebral symptoms. Local bleeding, cups and leeches, are only indirect means of accomplishing the same purpose.

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After bleeding, or in cases where it is admissible, the antipyretics may be used with some freedom; antipyrin, acetanilide or phenacetine. The danger of depression of the heart should be avoided from these remedies, but has, as I believe, been overrated. Their slow solubility should be kept in mind so that they do not become cumulative in their effects. I have derived much benefit in the early stages of the disease from their careful use.

We are coming to think that fever alone is not a source of danger, but only the symptom or measure of poison in the system, and our treatment should be to eliminate this, or prevent its formation. Quinine in large doses reduces fever, in much the same manner as the coal tar products. It has the disadvantage that it is more certain to produce depression of the heart, and adds to the cerebral trouble. Much controversy took place among the old physicians in regard to the use of quinine in pneumonia in moderate or large doses; some claiming great benefit from it, others feared its effects in an acute disease. In many parts of the country malaria enters into every system and becomes a factor of every disease. If the vitality is lowered from any cause it asserts itself. If other diseases arise it becomes manifest. It is the intermittent feature of all the acute diseases of this country. Quinine is the antidote, and may be given in any stage of pneumonia, in ordinary doses, with benefit until the malaria is under control; beyond that it is an embarrassment. Quinine in malarial countries becomes so necessary and common that its place and properties are lost sight of and it is used indiscriminately.

"The nervous shock," says Loomis, "which attends the onset of pneumonia is greater than in any other acute disease." For this no remedy has been found so beneficial as *opium* carried to its full sedative effects, and kept up until the stage of resolution is reached.

Anyone who has had personal experience in the disease can testify to the relief experienced both in body and mind from a hypodermic injection of morphine — the rest from gnawing pain and distress, the ease of breathing and quiet that follows. There is no question about its mitigation of the disease. It should be used in the beginning, and freely. When resolution sets in it may be given at longer intervals, or omitted, or combined with expec-

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torants. Notwithstanding the antiquity of opium, there are many disputed points in regard to its action. Many hold that it suspends vitality, locking up the secretions and preventing the elimination of the poison that produces fever and the destruction of tissue; a mere temporary remedy for the relief of pain, and is to be avoided if possible. The old practitioners always combined something with it, and it was with the greatest reluctance that they admitted that it could be used alone for the cure of disease. Calomel and opium were intimate associates of great service; calomel getting the credit, opium was an accessory. It occurred to an observing man to try opium only in a grave disease. He found that it was the remedy and the associate an injury.

The bacterial origin of disease throws light on its effects. It suspends over-action of the organs, and prevents the formation of the poison producing the disease.

It tranquilizes and quiets the system until the immunizing material is produced. It does more; it narcotizes the germs that produce the poison. The old theory was that disease arose from a large measure of poison introduced or generated suddenly in the system. That nature sought to expel it and must be aided in every way by eliminatives. These were the stock in trade of the old physicians. Anything opposed to elimination was to be avoided. Now we hold that it requires only minute germs planted in the body to produce an overpowering poison. Medicines that prevent the multiplication and spread of these germs and their products, are the remedies required. This is the action of opium in peritonitis and pneumonia, and other inflammations. Given largely by hypodermic injections so as to not burden the stomach, it has proved the most successful and satisfactory treatment.

When the heart flags, give alcoholic stimulants in large doses; it takes the place of the opiate, suspending inflammatory action and keeping up the circulation, neutralizing or holding back the poison that is entering the system. Its effects should be carefully watched; the quantity may vary with the patient. In the old and enfeebled, five or six ounces up to eight or ten in a day may be necessary, especially to those habituated to it. Strychnia is recommended for its excitation of the spinal nerves. For the same reason digitalis is used to push up the heart. They have their

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places, but if weakness exists they may act as the whip and spur to the exhausted horse. Strychnia is the craze just now, and few diseases escape it. If an expectorant is deemed necessary, hydrochlorate of ammonia in three or four grain doses to allay the cough. Spirits of nitric ether may be added. It acts as a stimulant and a diuretic, which is often required to eliminate the morbid products in the blood. Easily digested and nutritious food should be given as soon as the stomach will receive it, having in mind the prostration and waste of the system under the disease. External counter irritants, turpentine, mustard and cantharides, have been mostly discarded. Warm poultices, moisture and heat are especially grateful applied to the chest; they relieve pain and may hasten resolution.

In some cases where the depression is great and the progress slow, in the latter stages the best effects have been observed from blisters, especially where there is a pleuritic complication. We may use with much benefit and with great relief, some of the crude old remedies which this age of placebos and sugar coating has too much discarded.

With the disease in children a different course must be taken. Give acetanilide or phenacetine for the fever, and cold sponging; a drop or two of tincture of aconite every hour or two is a good remedy, put around the chest an old oiled silk jacket; opiates must be used with great caution, or omitted. Nauseants in the form of ipecacuanha is necessary for the purpose of expectoration, with carbonate or aromatic spirits of ammonia. Give alcohol in some pleasant combination, freely. Alcohol for children has something of the effects of opiates for the adult. It soothes and relaxes, and prevents the extension of the poison and the exhaustion arising from the disease. Under the influence of a large dose the skin becomes moist, the breathing tranquil, and the pulse quiet. Continue this and the disease subsides. In some children Dover's powder is well borne and may be given. In the bronchial pneumonia of children, in membranous croup and diphtheria, astonishing results have followed the alcoholic treatment. Unfortunately it is impossible to get some children to take enough of the remedy to bring them under its influeuce.

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In the desperate stage of membranous croup, a child 3 years old took an ounce and one-half of gin by mistake. Signs of intoxication became apparent, but the breathing became easy and the paroxysms of coughing ceased. The medicine was repeated, in the after part of the day an emetic of ipecacuanha was given, and the membrane came up in shreds and casts. I have not succeeded so well in diphtheria, but have had excellent results in bronchial pneumonia.

In regard to the effects of opium and alcohol in these infectious diseases, they do more than sustain the heart and nervous system. They suspend the action of the organs, and also of the poison. They narcotize the bacteria that is producing it. This gives time according to the latest theories, for the immunizing substances to be formed. Sense and sensation are suspended under an anæsthetic while the forces of life go on. Shock is obviated, and the most dangerous operations are performed that were formerly fatal from shock or distress. Opiates and alcohol are more than partial anæsthetics, and their effects can be kept up for days. Profuse doses of alcohol is the accredited remedy for virulent snake bite. It prevents absorption and multiplication of the poison. Gangrene of the lungs sometimes occurs in the later stages of the disease, and arises from a new bacteria that has found a congenial soil. It may be combated with alcohol and sustaining tonics. Perhaps we may find a culture that will relieve it in the future. It is usually a fatal symptom and the disease is beyond control.

Even in the mildest form pneumonia is an exceedingly prostrating disease and most debilitating in its effects, hence good care, nutritious diet and change of air, if possible, should be had in convalescence. Malt extract, wine, simple bitters and strychnia should be used. Strychnia, or nux vomica, is a valuable tonic after the disease is over.

We may sum up our treatment as follows: In the first stage in a robust person, with oppressed breathing, high fever and pain, nothing gives such prompt relief as bleeding, either from the arm or locally by cups or leeches. In feeble individuals and inebriates this is contra-indicated. In women, nature frequently anticipates this by bringing on a menstrual flow.

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Acetanilide and medicines of that kind may be used in the beginning of the fever, together with cold sponging and ice bags. Follow with quinine in pretty full doses until the malarial element is eliminated. Frequently this should be continued throughout the disease. Opiates for the pain, and in doses large enough to arrest the inflammation and modify the disease. This may be continued until the later stages of the disease, in diminished doses. Give alcohol freely as soon as signs of prostration or heart insufficiency appear. Very large doses are sometimes given in the later stages. For expectorant give ammonia. Give chloral to produce sleep and allay the cough. Warm poultices to the chest; sometimes turpentine or liniment may be useful. Easily digested food, broth, milk, eggs, as soon as the stomach will receive it; use a cathartic of a mild kind, and a diuretic enough to regulate the secretions. In exceptional cases, delayed resolution and great torpidity, cantharidal vesication is useful. In some old cases with complications, potassa iodide may be used with advantage.

For children antipyretics, phenacetine or tincture aconite with baths for the fever, the oiled silk jacket, ipecac for an expectorant, Dover's powders for an older child, aromatic spirits of ammonia and alcohol in the form of rum, brandy or whisky, in full doses for a day or two. A grain or two of chloral occasionally for rest and sleep. Milk and broths to keep up nutrition.

Just now the attention of the profession is largely taken up with cultures and "toxins" and immunization. Much testimony is adduced for successful results (especially in studies of animals). There is without doubt a good basis for expectation that we can cut short or control the disease by this means. The introduction into the system must be early and other means must not be neglected. Progress is rapid, substitute diseases giving immunity have been long known. The extension of the principle is of recent date. From Jenner to Pasteur and Koch, a long time, now many investigators are working in the field, but enthusiasm exaggerates and obscures and time and patience are required to clear away the mist.

Something of pneumonia and its treatment forty years ago may be interesting. It was said then that cases of primary pneu-

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monia in persons of good constitution frequently recovered without treatment. "The disease is mild between six and twenty-one. In debilitated persons and those above fifty it is generally fatal. More fatal in hospitals than private practice. Divided into simple, bilious and typhoid pneumonia. The latter almost always fatal. Treatment, bleeding in the early stages, from sixteen to thirty ounces. It sometimes arrests the disease. If the symptoms do not abate bleed again at an interval of from twelve to twenty-four hours and again if the pulse is not reduced. If the patient faints it is a signal to stop. After bleeding evacuate the bowels by an active cathartic, calomel and jalap or the compound cathartic pill." Ten grains of calomel and of jalap was considered a fair dose. Follow it with castor oil or Epsom salts. After this have recourse to small and repeated doses of tartar emetic, the twelfth to the fourth of a grain, every one or two hours. There will be a tolerance of it so that soon no vomiting will follow. After two or three days of this treatment give a mixture of opium and ipecac, a grain each with two or three grains of calomel every night. Sometimes it is necessary to increase the frequency of this dose and lay the foundation of a mercurial impression. If the pain continues after this treatment and there are symptoms of unchecked inflammation apply cups and leeches to the chest, abstracting from four to ten ounces of blood. Large and emollient poultices are to be applied. Very frequently the patient recovers without further medication. Give acidulated and effervescing drinks sparingly. If the disease proves obstinate resort to the mercurial impression; give half a grain of calomel and a quarter each of ipecac and opium every two or three hours. When a speedy impression is requisite give three or four grains of calomel with a half a grain of opium every four hours. Push it until the gums are affected; avoid profuse ptyalism. Begin this the fifth day, at the same time apply a blister, eight by ten, to the chest, not less in size than six by eight. Should the case linger repeat the blister. In the declining stage give syrup of squills and senegæ with a little tartar emetic and a little of the salts of morphine. Tincture of digitalis may be added if the pulse is weak or frequent. If the strength fails give carbonate of ammonia. If copious sweats

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occur give wine-whey and quinine. Oil of turpentine is sometimes given in large doses.

The timely use of a moderate stimulant with a nutritious diet has saved life. Stimulants are allowed to intemperate presons. If the disease has reached the stage of hepatization bleed with more caution, there is little hope of cutting the disease short. In young children bleed with leeches, follow with calomel and tartar emetic.

Other courses of treatment are mentioned. The use of tartar emetic in large doses. Given in place of blood-letting, it depletes by vomiting and purging. A grain every two hours in mild cases up to the sixth dose ; in threatening cases, continue steadily until amendment takes place, increasing if necessary to three grains. The better plan is to give from a quarter to three grains every two or three hours. (A little laudanum should be added if exhausting purging is produced.)

Its effect is to induce great depression of the pulse and coldness of the skin. Death sometimes occurred under the antimonial treatment, therefore blood-letting is deemed safer. Veratrum Viride was just coming into use and was taking the place of antimony with very marked success. Other remedies are mentioned *acetate of lead*, *digitalis*, *muriate of ammonia*, *iodide of potassa*, *hyosciamus* and *camphor*. The disease had been cut short by lobelia emetics in the beginning, followed by hot drops according to the Thompsonian plan, which includes hot packs.

The diet in the early stages should be mucilaginous and farinaceous drinks, such as gum water, barley water and gruel, to which was added decoctions of dried fruit and the juice of oranges. When fever had subsided, tea and toast were allowed, crackers and Indian mush, then broth and light meats. After this course of treatment, it was quaintly added : "There is reason to believe that patients in pneumonia have sometimes starved to death."

After this is it to be wondered that the average of human life has lengthened in the last thirty years and that sickness has increased? In those days no malingerer would risk his life more than once. And yet the current had set toward mild measures and was a great improvement over that of Rosseau and Lænnac.

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SENILE PNEUMONIA.

By Geo. F. Jenkins, A. M., M. D., Keokuk, Iowa.

THERE are certain anatomico-physiological differences in the lungs in adult life and old age, such as the dilatation and rupture of air-cells, their diminished elasticity and the obliteration of a large number of capillary vessels that should be considered in treating of this disease. With advancing years the vital capacity volume steadily decreases, so that in extreme old age the amount of carbonic acid exhaled per hour is little more than half the adult average, hence the want of breath experienced by all old people. The exciting cause of pneumonia is the presence in the lungs of the pneumococcus.

There seems to be abundant evidence in the literature of to-day to justify the belief that pneumonia sometimes prevails as an epidemic, and that it may, under certain favorable conditions, be transmitted from the sick to the well through the medium of the dried sputum, which is inhaled. The predisposing causes are hereditary tendency, cold, damp climate, malaria, alcoholism, sewer gas, catching cold and the special predisposing causes of the old, such as low vitality, feeble resisting power and the anatomico-physiological changes above mentioned.

Passive congestion, from valvular disease of the heart, or the long-continued recumbent position may predispose to pneumonia ; also chronic Bright's disease.

La grippe, by reducing the resisting power and causing catarrhal inflammation of the bronchial mucous membrane, and thus affording a suitable soil for germ infection, has been the special predisposing cause in many cases of senile pneumonia during the past four years.

The pathological characteristics of senile pneumonia are, in addition to the ordinary structural changes in the adult, described under the terms engorgement, red hepatization and gray hepatization, as follows: More extensive infiltration of the affected portion of the lungs with serum, frequently pronounced œdema

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of that portion of the lungs not undergoing the pneumonic process; also hypostatic congestion and passive hyperæmia. Gangrene of the lung occurs much more frequently than in pneumonia of the adult — the vitality is so low that gangrene may take place as early as the third day of the disease.

SYMPTOMS: Senile pneumonia frequently commences very insidiously and runs a latent course. This is nearly always the case when it occurs as a complication of some other disease. When it is primary or idiopathic the onset is frequently sudden and with a chill or chilliness. A distinct chill occurring in an old person almost invariably indicates the onset of pneumonia, and when followed by fever, some pain in the side, slight cough, weakness, shortness of breath, loss of appetite, possibly slight delirium and quick, probably irregular pulse, unless organic disease be found elsewhere, pneumonia should be suspected, even though a very careful physical examination fails to reveal the signs of that disease. Occasionally old people go to bed complaining of being tired and weak and suddenly expire — there has been no pain, no cough, no expectoration, very little fever, pulse slightly quickened. The post mortem reveals extensive hepatization of the lung as the cause of death. Cough is, as in the adult, a common symptom. It is generally short, hacking and painful, and is frequently unattended by expectoration in the early stage. The sputum, while generally quite characteristic, may not present the brick-dust appearance at any stage. Prune juice expectoration occurs more frequently than in the adult, particularly in alcoholic subjects, and indicates either a severe and dangerous form of pneumonia or passive congestion and œdema of the lungs, as a complication.

The reason of the frequent non-appearance of the viscid pathognomonic sputum in pneumonia of the old, is the rapid transition of the stages, purulent transformation sometimes taking place as early as the third day.

Elevation of temperature is one of the most frequent and reliable symptoms of senile pneumonia. Reaction after the chill may be slow, and the axillary temperature not be above normal, but the rectal temperature will always register from 100° to 104°. The fever may terminate by crisis from the sixth to the fourteenth

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day ; a fatal termination frequently occurs on the seventh day. The pulse ranges from 80 to 130 per minute, is hard and full at first, but soon becomes weak, quick (dichrotic) and irregular in most fatal cases. Respiration is always quickened, diaphragmatic, irregular or of a panting character ; expiration is prolonged and becomes increasingly labored. The patient seldom complains of dyspnœa even when, by counting, the respiration is shown to be 30 or more to the minute, and when large portions of lung tissue are undergoing the pneumonic process and other portions in a state of collateral œdema and hypostatic congestion. He lies in a condition of semi-coma, induced by carbonic acid narcosis, slightly delirious, his countenance showing cyanosis and a livid flush on one or both cheeks. Pain may or may not be complained of frequently. The complaint is more from a sense of weariness, weakness or exhaustion than from pain or soreness.

The urine is generally scanty, high colored and loaded with the urates. There is also a deficiency or absence of the chlorides.

The condition of the kidneys from day to day is of the utmost importance in senile pneumonia ; uræmic symptoms occur much more frequently than in the adult. Headache is frequently complained of ; also mild delirium, restlessness and sleeplessness.

Loss of appetite, thirst, dry, coated tongue and constipation are some of the more important symptoms pertaining to the digestive system. Jaundice may occur from partial obstruction of the pulmonary circulation, and the consequent passive congestion of the liver.

The physical signs of senile pneumonia are not so pronouncedly diagnostic as they are in the adult, but, as a rule, upon inspection you observe that the respiratory movements are largely diaphragmatic ; that there is very slight lateral excursion of the thorax ; that respiration is quickened and expiration prolonged. Percussion does not elicit dullness to the same extent that it does in the adult ; however, generally by a careful percussion, dullness can be detected, particularly over the posterior part of the hepatized lung. Auscultation during the stage of engorgement may discover the crepitant rale, but more frequently it is the sub-crepitant rale that prevails. The first stage is usually short, and these moist rales give place to bronchial breathing, which is the

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most important and most uniformly present physical sign of senile pneumonia, and is generally most distinctly heard over the posterior part of the chest. When a chill or serious indisposition occurs in a person advanced in age, a careful physical examination of the lungs should always be made, for in many cases of pneumonia without the usual rational symptoms the diagnosis is settled by the discovery of bronchial breathing. All authorities agree that latent pneumonia in the very old may run its course and terminate fatally without any rational symptoms, the post mortem, only, revealing the cause of death.

The diagnosis of senile pneumonia can generally be made by a careful examination. Chill, elevation of temperature, weakness and bronchial breathing are the symptoms most uniformly present. The fact that pneumonia is so frequent and fatal in the aged causes us to suspect that disease, in all cases of suddenly developed sickness, unless a careful examination finds evidence of disease elsewhere.

Pleurisy with effusion is very readily differentiated from senile pneumonia by the pronounced features — on percussion, enlargement of the side, bulging of intercostal spaces and other marked physical signs.

PROGNOSIS: This is always a grave disease, and the greater the age the less are the probabilities of recovery. Loomis says that nine-tenths of all deaths in persons past 65 are shown, by post mortem examinations, to be from pneumonia. The progress is more favorable when delirium is absent and the pulse is not irregular or intermittent or above 110 and when the temperature is not above 103°. Prune juice expectoration, excessive exhaustion, cyanosis, Cheyne-Stoke's respiration, cold sweat, and small, quick, weak, irregular pulse, are symptoms that denote an unfavorable termination. The duration of favorable cases is from six days to two weeks — fatal cases rarely pass the seventh day. The most serious complications of senile pneumonia are pulmonary œdema, hypostatic congestion, uræmia where Bright's disease pre-existed, valvular disease of the heart and the consequent heart failure.

TREATMENT: Statistics give the mortality of croupous pneumonia as 80 per cent in those over 60 years of age. I cannot be-

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lieve that it is so high in these days of well-regulated hygiene, careful nutrition and improved therapeutics.

In senile pneumonia we should remember the oft-repeated advice and treat the patient instead of the disease.

Venesection may possibly be advisable in certain cases of very severe or double pneumonia in robust, vigorous young adults, but it is contra-indicated in the aged. Those statistics are very unreliable that have been given to prove that pneumonia was more successfully treated fifty years ago by venesection than by modern treatment. Their methods of diagnosis were very imperfect. Most of the physicians at that time knew nothing about physical diagnosis and were totally incompetent to make a thorough physical examination. Half the cases dying of senile pneumonia in those days were said to have died of "old age," "low fever," or "general debility." In these days of special diagnostic skill nearly all cases are correctly diagnosed, and the proper cause of death being assigned, the mortality from pneumonia seems increased.

Pneumonia being a self-limited, specific fever, efforts to abort have generally proven unavailing. However, if called during the chill much good may be done by putting the patient to bed and applying a number of hot water bags to the extremities and giving gr. iij of phenacetine, and viij gr. of quinine. This dose should be repeated in three hours; ½ gr. doses of calomel should be given every two hours till 4 gr. are given, and then, if necessary, its action should be arrested by a ʒi of pulv. glycyrrhi. comp. This treatment generally reduces the fever and puts the patient in a condition to be benefited by the supporting and stimulating treatment necessary to safely conduct him through the disease.

℞. Ammonia carb. ʒij, syr. tolu ʒij, spt. frumenti ʒij.
Sig.: Two teaspoonfuls in a wineglassful of water every three hours.

This should be given, unless contra-indicated, till after crisis. Should the urine become scanty, high colored and loaded with urates, give a dessert spoonful of liq. potass. cit. in water every three hours. I have found many cases of senile pneumonia, where uræmic symptoms began to appear, promptly improved by this potash salt.

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Where the pulse begins to quicken and become irregular, the breathing labored and the face cyanotic, in addition to the ammonia and whisky I give, with great advantage, digitalis, strychnine and nitroglycerine. In fact, I am sure I have saved several cases of senile pneumonia with these last named remedies. I give 1 drop of the 1 per cent solution of nitroglycerine every two hours, and then increase or diminish the dose according to effects. I give from the 1-30 to 1-20 grain of strychnine, hypodermically, every four hours, increasing or decreasing the dose, according to effect produced. I saw Mr. E., age 64, in consultation, on the seventh day of the disease. Friends and physicians thought he was hopeless; two lower lobes of right lung hepatized, pulse 128, weak, dicrotic and irregular, temp. in rectum 103½°, respiration of Cheyne-Stoke's variety, heavy stupor from carbonic acid narcosis, face cyanotic, extremities cold and clammy. Gave strychnine and nitroglycerine as above recommended; repeated the dose in one hour; pulse and respiration promptly improved and patient recovered; patient had been taking whisky and ammonia freely before I saw him. I have treated several patients, from 65 to 83 years of age, successfully, with the same remedies where the symptoms indicated a fatal termination. Before commencing treatment by these powerful and prompt cardiac and respiratory stimulants, even though the pain is severe in senile pneumonia, opiates should be given, if at all, very circumspectly.

According to my experience there is more danger in narcotizing the very old than the very young; particularly is this true in regard to old ladies. I have more than once seen so small a dose as the 1-12 grain of morph. given hypodermically, produce alarming narcotism. Sedatives to the circulatory and respiratory organs are contra-indicated in senile pneumonia.

The position of the patient should be frequently changed, as hypostatic congestion is one of the most frequent complications of this disease. Nutrition of the aged patient is the all-important thing. If at the commencement of the attack you give too much food, you derange the stomach and destroy the appetite. Food should be given in small quantities every three hours, always in the fluid form. Beef juice should be the main food; other fluid foods may be substituted sufficiently often to prevent surfeiting;

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milk punch, buttermilk and sometimes sweet milk can be given; milk diet is not tolerated by old persons as by children. I like the effect of good coffee with plenty of cream much better. However, beef juice is the all-important food, and should be given as statedly every three hours as the medicine.

Blisters should never be used in this or any other form of acute pneumonia. Other counter irritants and external applications can be used when indicated.

After crisis the patient should be visited frequently and observed carefully, because many a case of senile pneumonia has terminated fatally when almost cured. Convalescence is always slow, nutrition impaired, appetite capricious, secretions perverted, blood impoverished, and strength, therefore, slowly regained. Patient cannot be rapidly forced back to health, but can, by careful nutrition and gentle usage, be nursed and coaxed, as it were, back to his usual health and strength.

The treatment of pneumonia by antipneumotoxin is still under investigation, and possibly very soon the blood serum of animals, made immune by having had the disease, will be an important factor in the treatment.

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THE GENERAL PRACTICE OF MEDICINE.

By C. B. Powell, M. D., Albia, Iowa.

THE GENERAL practice of medicine and surgery is that in which the majority of practitioners are engaged, and to be thoroughly equipped requires that the physician be maturely versed, not only in the rudimentary branches which are absolutely essential, but in the various sub-divisions or specialties that necessarily go to make complete the work devolving upon him. The advanced position and high standing of the profession of the present, is due largely to indefatigable and incessant work of those following special lines of work, thereby making it practicable for those in general practice to adopt the measures and apply to the field in which they labor. So much is required of him that he keep abreast of all advances, with an understanding that will enable him to meet the exigencies of what might be classed as special work, with a satisfaction and knowledge of fitness for that devolving upon him. The tendency of recent years is to divide the practice into specialties, which if carried to extremes, as advocated by some, would so narrow the work of the general practitioner, that practically it would make him a specialist only in the line of prevailing acute febrile diseases, and a lucrative business would be sacrificed. While the physician in general practice should be able to meet all the various phases of disease and locate them successfully as a rule, without exception, yet there are cases occasionally presented to him where time and special study are required, which can best be handled by those qualified and prepared for special work. Time is a factor in great demand by the general practitioner, and frequently this consideration alone would determine the question as to whether, in the interest of the patient it should pass into the hands of the specialist. It may occur that however well qualified he may be, he cannot while in attendance to a general business, do justice to a patient requiring special care. Then such cases should freely be handed over to other and more competent hands. Such might arise in any of the sub-divisions in ophthalmology,

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dermatology, neurology, or gynæcology, and yet the major part of gynæcological work can be done in general practice. It is not clear just where to draw the line between the general practitioner and the specialist, but with a conscientious idea of duty he can accept all cases, both medical and surgical, with which he feels competent to deal. That we should have those by virtue of special preparation, who are better fitted for special work, I strongly favor; but that we should make an effort to divide our work into segments entirely, I do not think to be in the interest of the profession, or our duty to ourselves or our patrons. The demand then is not that we have many specialties, but few, and practiced by those in whom the profession can rely, and to whom they can with assurance and confidence direct their patients.

With the one so sending a patient, it is not an admission of ignorance on his part, but that the case should have thorough and competent study. With a proper division of the work, there should be perfect harmony and accord. The wonderful advancement of medicine in all its branches, as well as surgery, makes the work of the physician easier and pleasanter—easier because where there was once darkness, there is now light; the effulgent light of bacteriological science has dispelled the mists that have so long hung like a cloud over the profession, and we have rationalism as a result; pleasanter because results are more appreciable.

To establish and maintain a high standard of medical education is the expressed determination of the profession. That there has been a demand for the specialist, the results of those laboring in that field fully confirm, and while the general practitioner, of necessity narrows the field of the specialist, he should nevertheless give due credit for advanced position largely to those engaged in special investigation, which in the aggregate goes to make up the work assumed by him.

A few years ago at a society meeting, I heard a prominent medical gentleman remark that in all cases of labor, fully three-fourths resulted in laceration of the cervix uteri. This assertion at that time seemed to me to be an exaggeration, but observation and study in that direction confirms the statement. The knowledge of this enables a very large class of patients to be relieved of ailments that previously made life a misery, and that could

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only be relieved temporarily. By removal of cicatricial tissue, and a restoration of the uterine contour, by coaptation of everted cervical edges, relief is at once obtained to an ever grateful sufferer. When this condition exists, and derangements result from it, their is no class of work that will yield better results. Yet it is singularly true that there is a great disproportion of suffering among those afflicted with cervical laceration. With some where the rent is complete, as well as bilateral, the effect is surprisingly insignificant. With others, where but slight, there is eversion and erosion, with all the torments in an exaggerated form, from structural and functional disturbance, which, releived by local treatment, soon return, with a repetition of the same annoyances. So it frequently happens that the smallest traumatism more imperatively demands operative measures.

While we are freely willing to acknowledge the great benefit and advantage attained in special lines as applied to general practice, yet we are often too credulous in receiving what are apparently remarkable results, and which through the crucial test of practical experience, are found unreliable and fallacious. The Bergeon treatment for phthisis came heralded as the one great positive cure, which with the Koch tuberculine, was soon relegated to the rear, not having passed beyond the experimental stage. As a diagnostic measure however, the Koch discovery *has* been eminently successful, which in reality was all that was claimed for it by the eminent bacteriologist. We are hopeful that better results may follow the antitoxin treatment for diphtheria, but considering it from reports, without the results of actual experience, one cannot but think its claims are not fully substantiated, and while I have been so fortunate as not to have an opportunity to test its virtues, I am not convinced that I would confidingly rely upon it to the exclusion of other tried remedial agents. Successful experience only, in a line of treatment, gives confidence in its efficiency.

Aside from the question of division of professional work there is one other of vast importance, demanding wise judgment and firmness. The ranks of the profession are filled through the channel, principally, of general medicine. Few who expect to enter specialties are prepared to do so without training in general work, and but few of our successful specialists but who have gone

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through a number of years of general practice. That our ranks should be filled by thoroughly competent material is one of the most serious problems with which we have to deal. The eagerness of applicants as students, as well as the interest of the profession, makes it necessary to be extremely careful in selection of material. None should be encouraged who have not a creditable literary education. This primary cardinal principle should be strictly adhered to. As much depends on the selection of our students as on our colleges. It is folly to condemn our medical colleges and admit students in our offices who could enter only inferior institutions. The advanced step taken by the Association of Colleges should meet the approval of all, being the proper way to elevate the standard of medical education, together with concerted action on the part of the general practitioner. It is unfortunate that we have institutions that care more for quantity than quality, but by judicious care on the part of the profession, the demand will compel the elevation of all.

SCARLET FEVER.

By A. B. Bowen, M. D., Maquoketa, Iowa.

SCARLATINA, or scarlet fever, is an acute infectious disease, characterized by a diffuse rash and an angina of variable intensity. In its mildest form it is a trivial affection, while in its severest form there are few diseases more appropriately styled malignant, which may terminate fatally, before a clear conception of the nature of the malady can be arrived at.

We meet scarlatina either in the sporadic or epidemic form. Age seems to be a predisposing factor in this disease. A very large proportion of cases develop prior to the tenth year of age, although adults are by no means exempt from its influence, while infants of a few months seem to possess a certain immunity against the poison ; the fatality among this class is large if they contract

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it. The writer once attended a case of parturition, while in the same room, and in the same bed, was a case of scarlatina at its most pronounced stage, yet nothing serious resulted to either occupant. The susceptibility to this infection varies, and not all who are exposed to its subtle influence, are affected in equal degree.

During the past winter the writer met with several instances where the most thorough exposure to the poison by those not immune failed to contract it. Attempts to isolate the specific germ in scarlet fever have proven ineffectual. The contagion probably does not develop until the eruption makes its appearance, and many cases of infection result from exposure during the stage of desquamation, when the contagious miasm is specially virulent, and when its facilities for dissemination are favorable.

A great diversity of intensity characterizes this disease. Instead of the regular tendency to convalescence, a higher febrile excitement, great restlessness and delirium, coma and convulsions may be present, overwhelming the vital forces, death taking place in two or three days, or even in a few hours, and before the stage of eruption has appeared.

W., age 9 years, complained of headache and indisposition on rising, which increased during the day, evidently attended with high fever; during the night boisterous delirium was present, the father alleging that he had to restrain the patient from getting out of bed. In the morning a convulsion added to the terrors of the situation, when a physician was called, but the patient died before his arrival.

Was this not a case of scarlatina? No eruption had been noticed, and no cases of the fever had existed in the neighborhood, but a case developed the next day, noted mainly for its mildness, in the same house.

Throat symptoms may predominate and either develop early or during the stage of desquamation; swollen glands and induration of surrounding tissues to an alarming degree may render deglutition difficult or impossible. The inflammatory action may extend by continuity to the middle ear through the Eustachian tubes, causing suppuration and rupture of membrana tympani, and even the escape of the ossicles through the external meatus, thus causing permanent deafness.

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Among the many complications or sequelæ of scarlatina may be found articular rheumatism, usually limited to but few joints, and endocarditis may supervene.

Uræmic coma, or convulsions, involve imminent danger to life, and with a marked diminuition of urea, should excite our gravest fears for the safety of our patient, and prompt our efforts to the elimination, through the other channels, of that element which nephritis has rendered the kidneys powerless to accomplish.

Mild cases require little more than hygienic treatment, while malignant cases may prove fatal in spite of all known therapeutic measures. We claim no specific against this formidable enemy to juvenile life, yet much may be done to modify and avert impending danger, as well as to mitigate the severity of symptoms.

As renal disease is a source of danger as a complication or sequel, measures should be taken to care for the skin in every case. The tepid bath, sponge bath or wet pack, are remedies of great value to divert from the kidneys. Water is the first remedy, notwithstanding the popular prejuduce, and if thoroughly and persistently applied, sponging the surface of the body with tepid or cold water, as is most agreeable to the patient, will do much in the way of contributing to the comfort of the patient, in relieving insomnia, restlessness and delirium, as well as subduing the febrile action upon which these symptoms are dependent, and, as a rule, the intensity of fever is a criterion of the severity and danger of each case.

Sedatives and antipyretics may serve a good purpose in some cases but are inferior to ablutions of water, in tranquilizing the nervous symptoms and subduing fever. In malignant cases, sustaining measures are the main reliance in connection with antipyretics and eliminants, as indicated.

If throat symptoms predominate, with great swelling, a fetid breath, and extensive pseudo-membrane, presenting a picture clinically inseperable from diphtheria, our reliance must be on supporting measures, disinfecting gargles, hot or cold packs, and tonics, like iron and quinine, to fortify the blood against toxic agents, as well as alcoholic stimulants to counteract cardiac weakness and support the vital powers. If systematic bathing is resorted to, troublesome pruritus is controlled during the febrile

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stages, while inunctions of sweet oil, or any other oily substance, during the stage of desquamation, answers the same purpose.

Convulsions, whatever their etiology, always require prompt action and, in addition to eliminants and packs, the gradual inhalation of chloroform often has the desired effect. If disposed to recur they are best controlled with chloral hydrate, with or without bromides; the chloral may be given one grain for each year till the fifth or sixth, every hour or two, till the nervous system is tranquilized and the convulsions brought under control.

If nephritis is present, to eliminate urea is the *sin qua non*. Diaphoresis should be induced by hot air, hot packs or jaborondi.

Cases so mild as to lack positive diagnostic symptoms may be followed by the severest attack of nephritis.

R. S., age 5 years, had so mild an attack that little restraint was placed upon him, and, while apparently convalescing, symptoms of nephritis developed; there was practically entire suppression of urine for a day or two; a specimen was tested with heat, which entirely solidified, and on inverting the tube not a drop escaped; muscular spasms implied convulsions imminent; a vigorous resort to eliminants, as hydragogs, hot baths, and the administration of—

℞. Pilocarpine, gr. i.
Aqua, ʒiv.
M. S. Teaspoonful every two hours—

soon produced a profuse perspiration, re-established the flow of urine and brought about convalescence.

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THE TREATMENT OF EPILEPSY.

By T. P. Stanton, M. D., Chariton, Iowa.

THE TREATMENT of a given case of epilepsy is a complex question, requiring the highest skill of the physician. Anything like routine prescribing, based solely on a diagnosis of epilepsy, is fraught with grave consequences to the patient, and is largely futile in its application.

Epilepsy is a disorder that is frequently met with, and its early recognition and treatment is of the utmost importance. It is difficult to say just what proportion of the whole community are epileptic, as it is a disease that is frequently concealed, so that published statistics are far short of the actual number of epileptics in a given community. Many cases of *petit mal* pass unrecognized, and again, those who have the severe convulsion at infrequent intervals, or at night, may not be detected by their own families. The same may be said of statistics regarding the treatment of epilepsy. The confirmed cases, after the disease has existed for many years, present practically no hope of improvement, and almost none of even temporary amelioration. But it may be taken as a general proposition that no case, however hopeless, should not be undertaken, as in rare cases some surprising results are achieved. On the other hand, no case is so slight as not to deserve the most painstaking investigation on the part of the physician. Too often we have known physicians to disregard slight convulsions in a child, to ascribe them to teething, worms or other convenient etiological omnibus, when the epileptic factors were quite pronounced. If they occur in adults, their reference to a disordered stomach lulls both practitioner and patient into a feeling of false security from which they are often rudely awakened by the progress of the disorder. By this time the disease has become seated, and the golden opportunity for treatment has passed. It may be said that the prospect of cure in any case is in an inverse ratio to the duration of the disease. This is especially true of idiopathic or essential epilepsy, and the rule does not apply

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to the same extent in peripheral or traumatic forms. It should be a cardinal rule with all practitioners, when in the presence of a convulsion, suspiciously like epilepsy, to treat the disorder as such. It is better to err in this direction than to make a false diagnosis and permit the great advantage of early treatment to pass unimproved. Even though we should now and then treat a case for epilepsy that was not really such, the error would be of comparatively trifling consequences to the patient. Then, I say, treat every suspicious case as one of true epilepsy. Again, too often valuable time is lost in sending the patient to a specialist in nervous diseases. If every family practitioner would earnestly undertake the treatment of the epileptic in the earliest stages of the affection our records of the medicinal treatment of the affection would show a much larger percentage of cures. If there is a *pons asinorum* to be condemned more than another, it is the dismissal of an epileptic child with the statement that it will outgrow the disease. It is true that in some cases recovery takes place spontaneously, but it is precisely where there is such a natural tendency toward a favorable result that our remedies are of such value.

The treatment of epilepsy naturally divides itself according to the form, cause and mode of onset of the disease. There is practically no difference in the treatment of *petit mal* and *grand mal*, but there is an essential difference in the treatment of the traumatic, peripheral and essential varieties. Regarding the significance of these terms, I would say that essential or idiopathic epilepsy is understood to mean that form which developes in an individual from general constitutional weakness or hereditary defect. By peripheral is understood those cases which might be termed reflex. The traumatic group includes all head injury cases, whether accompanied by fracture or not. I do not agree with many writers as to the over-mastering importance of reflex causes in the production of epilepsy. It is now and then true that a case may be dependent upon an adherent prepuce, hemorrhoids or other source of irritation, but it is exceedingly exceptional when the removal of such causes cures a well developed case of epilepsy. The efforts that have been put forth in some quarters to show that epilepsy is largely reflex in most cases, dependent upon some error of refrac-

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tion or strain of the extrinsic muscles of the eye, is in my judgment based on an erroneous conception of the pathology of this affection. Nevertheless all such peripheral sources of irritation should be earnestly sought and removed. Not that the removal of an adherent and inflamed prepuce will necessarily cure the epilepsy, for in the majority of cases it will not, but it is one of the sources of irritation which, if removed, will place the patient in better position to overcome the disease. Indeed, we can see no special reason for not removing an adherent and inflamed prepuce whether the patient is epileptic or not, and the same may be said of the advisability of correcting gross errors of refraction, or curing displaced and inflamed ovaries.

Age plays an important role in the production of epilepsy and necessarily influences its treatment. The vast majority of cases develop before the fifteenth year. Infantile epilepsy is common, and there is a rapid increase in the number of cases until the sixth year, when there are fewer cases. This is succeeded by a marked increase in the number, which culminates at the fifteenth year. From the fifteenth to the twentieth year there is a rapid decline. Epilepsy occurs in the aged, but it is quite rare.

It will be seen that the vast majority of epilepsies occur in early life, before puberty, and when development is most active. To be more specific, it is during the periods of active growth, from the first to the fifth years, and from the eleventh to the fifteenth, that the greatest number of cases occur. The majority of these cases belong to the class of idiopathic epilepsy, that are not accompanied by any appreciable alteration in the nervous centers. On the other hand, the greater proportion of late epilepsies — those which occur after the twenty-fifth year, are due to skull injuries, syphilis or atheroma.

When a diagnosis of epilepsy has once been made in a child, it is but the beginning of further inquiries. As we said at the opening of this paper, anything like routine in prescribing for or managing epilepsy is sure to result in failure. The diagnosis once made, any physician who dismisses a child with his favorite prescription, with the idea that its indefinite continuance will relieve the disease, is sure to be disappointed. As soon as epilepsy is determined, there should at once begin a campaign of education.

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The gravity of the affliction should be pointed out to the parents, and the importance of having the child under observation during the entire period of growth should be explained to them. Emphasis should be laid on the obstinate character of the disease. Finally, if the confidence and co-operation of the parents cannot be secured, it would be well to decline undertaking the case. At least they ought to promise that the child should be seen at least once in two weeks for a period of three years. This secured, there should follow a careful examination of the child,—eyes, ears, genital organs, heart, lungs, kidney, and everything which might throw light on the origin of the malady should be investigated. Above all, the question of nutrition should be carefully considered. In many cases want of development of teeth, bones, mis-shaped ears, high arched palates, show defective assimilation. In all such cases the weight should be carefully noted, and the growth of the child watched. In diet, like medication, routine should be avoided. In too many cases, this simply consists in a sweeping injunction to avoid the use of meats. A wiser plan is to study the needs of each particular case, and note the effect of different articles of diet on weight and development. Particular attention should be paid to the digestive tract. Both stomachic and intestinal digestion should be promoted by every possible means. The regularity of the bowels should be maintained. The habits of the child as to out-of-door exercise, dress, sleeping, etc., should be carefully attended to. It will be contended that in many cases it is impossible to secure ideal conditions in these respects. Often this is true, but if the gravity of the disease is explained to parents, their hearty co-operation will more often be secured.

In the great majority of cases, idiopathic epilepsy is associated with the period of growth, and it is precisely in this period that we have the greatest demand for supplies. Therefore, a careful regulation of the diet, with an abundant supply of nutritious food, is of the utmost importance. In these cases, the administration of cod liver oil will be found of great benefit. The fats generally are useful, and where their digestion is not difficult, as in certain catarrhal conditions of the stomach, they should be given with a free hand. In many cases where the taste of cod liver oil is objectionable, cream may be substituted.

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As a rule, iron is contra-indicated in all forms of epilepsy. If, however, there is marked anæmia, it may be given. The bitter tonics may sometimes be given, but their range is only limited. Of specific remedies, first and foremost we would prefer the bromides. Our own preference is for the sodium salt, but occasionally the mixed salts of sodium, potassium and ammonium, together with a small quantity of bicarbonate of potassium to make the solution alkaline, is better borne by the stomach. About 20 per cent of epileptics cannot take bromides. Either the disease is aggravated by their administration, or they produce such impairment of the mind and nutrition that they must be discontinued. If they can be employed it is well to begin with a dose of fifteen grains, and this should be increased until the cessation of the convulsions, where it should be held for a time, and then gradually reduced until ten grains or even five is reached. The medication should be continued for at least two years from the last attack. If a convulsion should occur after the remedy has been discontinued, it should be begun again and kept up for at least two years. While under this treatment the patient should be seen at least once each week, and constant observations should be made as to the rate of growth, body weight and condition of digestion. It is well in all cases to have a regular diet and exercise list made out each week. This should be looked over, and it will form a basis of suggestion for the following week. Hydrotherapy has an important and much neglected place in the treatment of epilepsy and other functional neuroses. The use of the cold sponge bath, or pack, followed by friction or sharp exercise to bring on reaction, is one of the most important means for tranquilizing and strengthening the nervous system.

In cases where bromides cannot be used, belladonna, borax, or the preparations of zinc may be employed, but in my hands they have never proved anything like as useful as the bromides. I cannot, however, leave the subject of the medicinal treatment of idiopathic epilepsy in children, without again referring to the importance of combining with your specific remedies, dietetic, nutritional and hygienic measures. If I were limited to a choice of any two of these to the exclusion of the others, I should choose the dietetic and nutritional, rather than the specific.

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When we come to the adult idiopathic epilepsy, essentially the same rules apply; but in these cases, as the period of development has passed, there is not the same importance to be attached to nutrition, though it is not by any means to be neglected. In adult epilepsy the important role played by syphilis, atheroma, traumatism and coarse organic disease is to be taken into account.

Regarding surgical operation for epilepsy, I would unhesitatingly condemn it in all except those cases of obvious traumatism where there is good reason to suspect depression. Also in cases where there are distinct focal symptoms pointing to a localized and limited lesion of the cortex. Even in cases of fracture with depression, where the disease is of long standing, it is almost certain to recur after the operation, and usually with added severity. Any operation which requires the removal of a considerable section of the bony envelope of the brain is to be undertaken only after the most mature deliberation.

In adult epilepsy elimination, especially by the kidneys, is to be carefully looked after. In many cases dependent upon atheroma and coarse organic changes in the brain, the iodides should be used in combination with the bromides. In cases where syphilis is suspected it may be well to give mercury in some form, probably by inunction. In obstinate cases of epilepsy in adults, the combined opium and bromide treatment of Flechsig may be tried. This plan has proven effectual in suppressing the attacks in many cases in which the bromides alone were not well borne or had not lessened the attacks. The method consists in the administration of opium, beginning with one grain thrice daily and increasing the dose until twelve to fifteen grains are given each day. At the end of four or six weeks the opium is suddenly discontinued and a maximum dose of bromides given, which is gradually reduced. The opium seems to prepare the way for the bromides and to make them much more efficient. The method is of value in cases dependent upon organic disease, especially those in which the simple bromide treatment has proven so inefficient.

DISCUSSION.

DR. EMORY LANPHEAR, of St. Louis, Missouri, said: This is too important a subject to allow it to be passed without some

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remarks, even though it were but to commend some of the statements made by the essayist. Notably is this the case in regard to the length of time required to effect a cure in cases that are amenable to internal treatment. No physician should assume charge of a case of epilepsy unless he can have absolute control for at least two years. By the expression "absolute control" I do not mean merely that the patient shall be under observation, and take medicine regularly for that period, but that the doctor may dictate a certain mode of life; that is, to direct the quality and amount of food that may be taken, governed of course by the circumstances of the patient; to insist upon a proper degree of out-of-door exercise — a very essential thing, and one hard to secure, especially with females — to order proper hygienic surroundings, etc. If all these can be obtained, and if by the right means the intestinal canal can be kept in a normal condition as regards its excretory functions, many cases of epilepsy can unquestionably be cured by the line of treatment advocated by Doctor Stanton. While in the main I can but endorse the most of his paper, I must say that I am not as enthusiastic as he is in regard to the effects of the bromides. To tell the truth I am rather inclined to believe that many patients are injured by the use of the bromides, and my observation leads me to think these not as effective as is generally supposed. There are, too, many who cannot take bromides at all on account of idiosyncrasy, or because they excite a mental torpor of a dangerous degree. I have often seen the latter poor unfortunates reduced to almost total idiocy, and without much improvement in the convulsive seizures. For these reasons I cannot too severely condemn the *indiscriminate* prescribing of the bromide compounds. They must be ordered with judgment and watched with care. In many instances better results can be obtained from arsenic, particularly those cases not benefited by the bromides. For many such who have been brought to me for operation, but found not to be proper subjects for trephining, I have advised the administration of from three to five drops of the liquor acidi arsenici after each meal in a teaspoonful of compound syrup of hypophosphites, the National Formulary preparation. Under this line of treatment improvement has often been remarkable, especially when it has been

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possible to secure proper diet, correct modes of life, and restoration of a sluggish intestine to its normal functional activity.

The solution of bromide of gold and arsenic, in doses of from five to ten drops thrice daily, has recently been highly recommended. Those who have carefully investigated the subject cannot but agree with the assertion of the essayist that too much attention has been directed to "reflex" cases of epilepsy; undeniably too many ovaries have been removed by the followers of Battey and Hegor in the vain hope of curing nervous diseases, particularly hysterio-epilepsy. However, I think the doctor has, in company with many other excellent writers, gone a little too far in his condemnation of "reflex epilepsy." I feel sure from my own operative work that there are forms of irritation of the peripheral nerves which if long continued will lead to nervous phenomena that cannot by our present knowledge be differentiated from true epilepsy, and timely operation in such cases does unquestionably cure the convulsive disease, whatever its character may be. I refer especially to phimosis of boyhood, with its adhesions and retained decomposing smegma, a condition which leads to early masturbation if nothing worse, and to the scar tissue of lacerated cervix, and torn perinæum, as well as extensive scalp cicatrices binding down filaments of the peripheral nerves, and thereby keeping up a continued irritation which may culminate in epilepsy. If we ignore all such cases we do not give proper credit to the "orificial surgeons," who are certainly doing some good in their excesses. I have seen many "nervous cases" get well by some simple operation which relieved a peripheral irritation. There is no doubt of the necessity of such operative work in every case of epilepsy where such a source of irritation can be found. It should be the rule to make careful search for, and remove all sources of irritation, whether external or internal, in any case of epilepsy, and this rule, I believe, should be made to cover cases of eye strain also. Many cases of epilepsy have undoubtedly been helped by the correction of the hypermetropia, and other irritations of the cilary muscle and the nerves of the orbit. It is, however, with the expressions relative to the surgical treatment of epilepsy that I must take exceptions. In the first place while it is true that operations for the relief of old, traumatic epilepsies have not been

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attended by brilliant results, yet it is entirely the fault of surgeons that traumatic epilepsy exists at all. Every case of this character is a monument to the ignorance or timidity of some physician, or the obduracy of some parent. The way to cure traumatic epilepsy is to prevent it. You will doubtless appreciate this statement better when I assure you that fully fifty per cent of severe non-trephined injuries to the frontal bone are followed by epilepsy, mostly followed by insanity, of which fully forty per cent might be saved by timely operation ; that is, by proper treatment at the time of injury, and the same statement may be made of like injuries to the skull overlying the motor regions. The old teaching that a depressed fracture of the skull without symptoms of compression should be left alone, has done more mischief than almost any other ancient rule ; for, as Agnew said in his last paper : " However small may be the depression which follows a fracture of the cranium, it will encroach enough upon the dural nerves to cause more or less irritation, which though insignificant at first, and perhaps not at all recognizable to the consciousness of the patient, if unrelieved will be transmitted finally to the cortex and brain ganglia, until at last an epileptic explosion will occur. " And my own experience fully corroborates his further assertion, that whenever the medical profession can accept the doctrine that *all depressed fractures of the cranium, however small the depression*, and *entirely irrespective of present symptoms, are proper subjects for trephining*, then will traumatic epilepsy largely disappear. This should be the rule of every physician : to insist upon operation in every case where there is even a suspicion of depressed fracture ; if the people refuse to consent, then to withdraw from the case after thoroughly explaining the possibilities of the injury. The man who will do this may lose at the time but he will gain great credit eventually. In spite of all, however, a certain proportion of cases are bound to not be properly treated. Are we to neglect operation in these, as one would infer from the author's advice? I think not. It is true many operations for old traumatic epilepsy have proven failures, yet a large proportion are cured even quite late in the disease. Laurient collected one hundred and two cases subjected to operation at least two years after the onset of convulsions, with fifty-four cases cured. After such an operation, vigor-

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ous internal medication by bromides must be maintained for at least two years to prevent a recurrence of the spasms. By such measures most cases can be relieved, and many cured, but it is in Jacksonian epilepsy that we have the best cases for operation. Here we have an epilepsy dependent upon a gross lesion, which can be removed in many instances. Our knowledge of cerebral topography is truly phenomenal, and our methods of external measurements so accurate as to be almost marvelous. Why, I recall at the present moment a case of epilepsy upon which I operated several years ago. The only localizing symptoms were that the general convulsion and unconsciousness were preceded by a spasm beginning in the thumb and index finger of the left hand, the muscles of the eyelid, and those at the angle of the mouth. Here were two different groups of muscles situated in parts of the body anatomically quite remote from each other, so much so that one would naturally exclaim, "they can have no localizing significance." Not so. The centers which preside over motions in these different muscles lie in contiguous fields of the motor regions and so well were my measurements made that when I removed the button of bone, the center pin of the trephine, which was not withdrawn sufficiently soon, pierced the center of a sarcoma of the dura.

When such accurate work as this is possible in cerebral surgery, and when I see many cases of Jacksonian epilepsy improving after my operations, can you blame me for being an earnest advocate of operative treatment? As a result of my work and of much study I have concluded that every case of epilepsy in which the convulsion always affects the same group of muscles, or invariably begins in a definite region, or is preceded by a well defined aura, like a numbness, pricking, or formication in one of the extremities, perversions of taste, sight, or hearing, etc., should be subjected to exploratory trephining, and the same is true of every case of hemi-epilepsy, and of every general epilepsy that is followed by a temporary aphasia, or a semi-paresis or paralysis of any group of muscles.

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MYXŒDEMA.

By T. J. Maxwell, M. D., Keokuk, Iowa.

IT HAS been but a short time since myxœdema has been discovered, and no disease that I can call to mind of so short an acquaintance has had its pathology more satisfactorily worked out from experimental investigation, and the true cause ascertained whereby the rational treatment has been reached. This curious and interesting pathological condition has been christened by different observers by various names.

In 1873 Sir William Gull read before the Clinical Society of London a paper entitled "On a Cretinoid State Supervening in Adult Life in Women." In this paper Sir William Gull presented a graphic picture of the symptoms belonging to the disease now generally recognized under the name of *Myxœdema*.

In 1877 Doctor Ord presented to the Royal Medical and Chirurgical Society of London a communication on myxœdema, a term proposed to be applied to an essential condition in the *cretinoid* affection occasionally observed in middle-aged women. This paper was founded on observation made as far back as 1861, and contained, besides clinical facts, pathological investigations made during and after life. Doctor Ord proposed to apply the name myxœdema because a mucine-yielding œdema was the chief observable condition. He also noticed that the thyroid gland, post mortem, had either atrophied or that its stroma had been replaced by fibrous tissue. Soon after this the disease for the first time was noticed in males. The disease is found in the ratio of one man to six women.

In 1881 Charcot proposed the name of *Cachexie* pachydermique for the disease.

In 1882 M. Jaques L'Reverdin read a paper before the Medical Society of Geneva in which he communicated the results of a number of cases of total extirpation of goitreous thyroid glands, and pointed out that a series of symptoms exactly like myxœdema follow such extirpation.

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In 1883 Professor Kocher read a paper before the Congress of German Surgeons, in which he describes, under the name of *Cachexia Strumipriva*, the symptoms following the total extirpation of the thyroid glands; but he attributed the pathological conditions supervening to injuries to the structures of the neck, and not to the loss of the function of the gland. Doctor Serromo found that the loss of the function of the thyroid gland was a common cause of myxœdema, cachexia strumipriva and cretinism.

In 1884 Paul Bruns published a case in which the extirpation of the thyroid gland in a boy ten years old had been followed by the condition known as sporadic cretinism.

Victor Horsley, in his experiments on various animals, demonstrated, by the removal of the thyroid gland, that the loss of the function of this gland to the animal produced symptoms known as myxœdema and cachexia strumipriva, and by varying the mode of experimentation he satisfied himself that cretinism is but a chronic form of the condition.

From clinical observations drawn from various sources it would seem that young persons suffer more from entire extirpation of the thyroid gland than those of more mature years. This is in accord with the known activity of the ductless glands during early life. Nevertheless, observation and experience develop the fact that the majority of cases of myxœdema occur after thirty years of age—some after fifty years, and therefore proves that the importance of the gland does not terminate at thirty, the period of full development, but that its action is necessary and plays an active part in the animal economy for the greater part of life.

We have yet to learn many things about the functions of these ductless glands and the part they play in the animal economy in effecting tissue metabolism, for we have only to consider the remarkable fact that different results follow after total thyrodectomy in different animals. Thus no cachexia follows this operation in birds and rodents; in ruminants and solipedes the cachexia is only slowly developed; in carnivora it is prompt and severe, whilst in man and monkeys it is moderate but certain.

Now, if we come to analyze closely these animals, we find that the difference of class is due to a difference in their nutrition and metabolism.

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In vegetable and grain feeders total thyrodectomy produces no cachexia; in flesh eaters it is most severe; in vegetable and flesh eaters, omniverous animals, like man, it is moderate but certain.

The Myxœdema Committee of the Clinical Society of London has published a special report upon the subject in which 109 cases are tabulated, and which contains a number of interesting observations. The following is an epitome of a part of the conclusions arrived at: (1) That myxœdema is a distinct disease which is (2) commonest in middle age and affects women oftener than men, in the proportion of six to one. That one condition common to all cases is a distinctive change of the thyroid gland, of which the most common form consists in the substitution of a delicate fibrillar tissue for the proper gland structure. That there is an interstitial development of fibrous tissue which, while most frequent in the skin, is also met with in the viscera and is suggestive of an irritative process. That the anatomical cause for changes in skin and hair, etc., and for falling out of the teeth, in the alterations and gelatinous infiltration of the interstitial tissue, afford no explanation of the affections of speech, movement, sensations, consciousness and intellect which form part of the disease. That there is a large excess of mucine found in the skin, fibrous tissues, blood and salivary glands.

Case 1. Mrs. S. W., 45 years old, family history good, was a healthy young woman married at 20. Noticed that her neck began to enlarge at 22, and continued to increase slowly for five or six years. Was treated for goitre by the usual iodine applications, and the enlarged gland disappeared. Soon after this disappearance she noticed that she began to increase in bulk; her voice grew husky. About six years ago she had some teeth extracted which caused a severe hemorrhage that lasted twenty-eight hours. She has suffered of late years with menorrhagia. She has at various times eructed or vomited to the amount of a quart at a time what she called *matter* or pus. The specimen I saw was of the consistency of mucilage, of a grayish color, slightly tinged with yellow. I took it to be largely composed of mucus. This disease began about seventeen years since, and for the last ten years has been much the same as at the time of beginning treatment with the thyroid gland, viz.: Weight about two hundred

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and ten pounds; face round, lips thick like those of a negress, nose broad and flat, eyelids puffy and separated about half the normal width, eyebrows elevated as if in effort to open the eyes, a reddish bronzed spot on either cheek, forehead skin of a lemon color, tongue large, thick and apparently too large for the mouth; voice hoarse and rasping, deglutition difficult; hands and feet plump and puffy like those seen in anasarca, but the skin seems thick, doughy, harsh, dry and scaly; has not perspired for years, is easily chilled, feels better in hot weather than in cold; intellect slow in its operation, easily confused if hurried, somewhat irritable, memory impaired; speech slow and drawling, complains of a drawing from the lower part of abdomen to throat and back of neck as though her head was being forced forward and downward; her general appearance and couduct are those of dementia or imbecility; there is general paresis or muscular weakness, can walk but a short distance without exhaustion.

I began the treatment of this case with fresh thyroid glands of the calf and sheep, prepared by stewing until thoroughly cooked, adding a little salt and pepper to season, and serving the glands with the broth in which they were cooked.

Saturday, July 14, 1894. Morning temperature, 97 3-5 F.; evening temperature, 97 2-5. Gave the first dose of freshly cooked glands for supper.

Sunday morning, July 15th. Complained of headache, something quite unusual.

Monday, 16th. Took thyroid; evening temperature, 98½.

Tuesday, 17th. Morning temperature, 97; took thyroid for breakfast; had some headache; 12 M. temperature, 98½. Did not take thyroid for dinner; sweat freely during the afternoon, the first experienced for many years; 6 P. M. temperature, 99; headache gone; dose of thyroid for supper.

July 18th. Rested well during the night, but sweat freely; 7 A. M. temperature, 98; dose of thyroid for breakfast; head soon began to ache and continued until afternoon; 12 M. temperature, 97 1-5; took thyroid for dinner and supper; at 10 P. M. has some headache, still continues to perspire; skin soft and more natural in color; temperature, 98½.

July 19th. Patient rested well during the night; skin moist. Gave first dose of desiccated gland, prepared by P. D. & Co.; took two 10 grain doses of the desiccated thyroid. Bowels costive; gave a dose of saline mixture; continues to perspire.

July 20th. Slept well during night; bowels were moved in the early morning; took morning dose of thyroid; temperature, 97; skin looks natural and feels soft and pliable. There is a marked difference in the appear-

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ance, face losing its bloat, eyes open wider, voice less harsh and is losing its drawl; general shrinkage of body; shoes and gloves are quite too large. She did not perspire during the night; temperature rose to 98 at 2 P. M.; 7 P. M. temperature, 98½; has had no headache or sweating to-day.

July 21st. Weather turned cool during the night. Morning temperature, 9 A. M., 97; 1:40 P. M. temperature, 97 3-5; complains of headache; 7 P. M. temperature, 99.

July 22, morning. Had a bad night with pain in loins; pain extended up the spine to occiput. Patient remained in bed until afternoon, when she felt relieved from pain and arose and dressed, remaining up the balance of the day. Temperature was not taken; thyroid suspended.

July 23, 9 A. M. Feels better and rested better than night before last; still some pain in spine; temperature 98; general appearance improving; shrinkage of body and limbs quite perceptible to everyone about her.

This general improvement continued, the change being rapid for the next three or four days that she was under my immediate observation. Patient returned to her home after two weeks of treatment. The change in her personal appearance was so radical that her own family scarcely recognized her. The bloated imbecile that left home two weeks previously came back with eyes wide open and natural; the whole contour of face changed, with intelligent and sprightly expression, voice no longer stridulous, harsh and drawling, but prompt, clear and natural; in fact, the transformation was marvelous. Improvement continued until the transformation was complete and restoration entire. She was instructed to take a dose or two of the thyroid each week to prevent relapse. The question as to the length of time this must be kept up, or whether it can ever wholly be suspended is to be determined.

The second case I will not report *in extenso*. The subject is a lady, Mrs. D, of Keokuk, 64 years old. Had goitre, or big neck, which after treatment wholly disappeared, and there is no trace perceptible of the gland at present. Some eight or ten years since, she began to grow fat, as she supposed, gradually grew helpless and was thought to be dropsical. Her mental powers failed. Could not talk to a visiting friend but for a few minutes without falling asleep; sat in her chair and dozed most of the time. At the time she came under my care her general appearance was similar in all respects to the first case reported. Body weight over 200 pounds; temperature sub-normal.

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I gave the desiccated thyroid gland in capsules of 5 grains each, three times daily. The third day had to suspend the remedy on account of insomnia, general aching of the back and limbs. The change in general appearance, even in so short a time, was remarked by her family as being wonderful. The remedy was resumed in less quantity in three days after aching had subsided. Temperature rose to normal and at times above normal; skin soon became moist. The transformation in general appearance was so radical that she was scarcely recognizable by her friends in three weeks after treatment began. The body weight was reduced fifty pounds. She still continues to take a dose or two of thyroid each week. She walks about with ease and comfort and is herself again mentally and physically.

In both these cases exfoliation of the skin took place; the old epidermis came off in large flakes as seen in sequelæ of scarlet fever.

In the "Reference Hand-book of Medical Science" (1887) the writer says: "As to treatment of myxœdema little or nothing can be done;" and in Osler's able work on "The Principles and Practice of Medicine" (1892), it is stated: "Unfortunately no satisfactory treatment is known." The patients suffer in cold and improve in warm weather. They should therefore be kept at an even temperature, and should, if possible, move to a warm climate during the winter months. The physician of yesterday stood helpless and impotent in the presence of this singular and distressing disease,—to-day he bears in his hand a sure and speedy remedy.

It is interesting to trace the steps of the inductive method by which the desiccated thyroid gland of the sheep or calf is successfully used in the cure of myxœdema.

First. Myxœdema was observed to follow complete thyrodectomy.

Second. Post mortem examinations developed the pathological fact that the thyroid gland had atrophied or been replaced by fibrous tissue in persons dying of spontaneous myxœdema.

Third. Inference drawn from above facts: Myxœdema is caused by a loss of function of thyroid.

Fourth. Indications for treatment: Re-establishment of that function which was carried out by Billencourt and Serramo, of

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Lisbon, who introduced one-half of the thyroid gland of a sheep beneath the skin of the infra-mammary region on each side of a woman, aged 36, suffering from myxœdema. The operation was followed by immediate improvement. They observed that the improvement began the *day after the operation.* Inference: Improvement could not be due to the gland becoming vascularized and so, functional, but that it must be due to the absorption of the juice of the healthy thyroid gland by the tissues of the patient. Likewise, step by step — that time will not now permit us to trace — we have arrived at the certainty of the efficacy of the cooked or desiccated gland, when administered to patient by way of stomach.

DISCUSSION.

DR. HIATT: I was very much interested in this paper from the fact that some time in March last I saw the first case that had come under my notice. It was a case that had been suffering for years, and about one year ago was put under treatment by a neighboring physician with the desiccated thyroid extract. It seemed a very hopeless case from the history as given by herself and the physician, it appearing that he had given her treatment for a time, and then paid no farther attention to her. When she fell under my care, I asked her what she was doing with the thyroid extract, and she said the physician had told her to take very minute doses, from about one-half grain to a grain, and these doses had been continued for not over four months. I immediately put her back upon the thyroid treatment, she not being able to walk across her room, and with that drowsy and sleepy appearance, and that peculiar condition of the skin, an infiltrated condition, especially over the abdomen and extending two-thirds of the way around the body. To-day she is able to ride a distance of fourteen miles to the office once a week, and is taking from ten to fifteen grains of thyroid extract twice a day, and the action of the thyroid upon the skin shows remarkably, as in Doctor Maxwell's case. I am satisfied that to effect a cure with the thyroid we must continue it from month to month, leaving off only for a short space of time.

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THE ANTISEPTIC FACTOR IN THE TREATMENT OF THE ACUTE GENERAL INFECTIONS.

By Chris. H. Lange, M. D., Pittsburgh, Pennsylvania.

Physician to Western Pennsylvania Hospital; Professor Principles and Practice of Medicine Western Pennsylvania Medical College; Ex-President Allegheny County Medical Society, etc., etc.

Mr. President and Gentlemen of the Iowa State Medical Society:

The factor in the treatment of the acute general infections slowly but surely being developed at the present time, and deserving of the greatest attention and study, consists of the use of germicides. These are employed internally, externally and about the surroundings of the patient, very much as the surgeon employs them.

These diseases continue to present new facts and hypotheses regarding etiology, pathology and treatment, equally great in the interest they have always commanded, and the very considerable progress made in their study during the last ten years has materially and advantageously influenced their treatment. The infective agents, modes of infection, prevention of infection, liability and immunity, are subjects now based upon undeniable facts and hypotheses, and the consequent mutations in treatment together with a steadily decreasing mortality are to be credited largely to the knowledge gained of these subjects.

It is indeed true that such studies have not taught us how to destroy the specific pathogenic bacteria after they have obtained admission to the body, nor how to antidote or make innocuous the toxins resulting from their existence there. It is also true that no means are yet at our service by which the lesions their presence entails may be prevented, but it is of incalculable advantage to have obtained some conception of how the diseases produced by them depend upon vital, chemical and mechanical processes; that these diseases consist, not alone of any one primary infection with its results, but embrace added infections and intoxications, and super-added processes and products, and that these mixed infections are a necessity to the production of the lesions and perversions of function which characterize these diseases. The close

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relationship established between the pathogenic bacteria, since they belong to one family or class and possess many functions and properties which are identical, gives explanation to the long observed clinical likenesses of these diseases to each other and to the similarity of the lesions and perversion of function they present in common. The diseases caused by the various pathogenic bacteria present as many clinical identities as differences, and this is equally true of their lesions and functional perversions.

Although still unable to employ germicides for the destruction of specific bacteria, because such agents are still unknown to us, or because, if known, their action upon animal cells debars their employment in quantity or strength sufficient to kill the specific germ, I venture the assertion that we have succeeded, by the use of germicides, in very decidedly limiting, frequently in entirely abolishing or preventing, secondary infections.

Inasmuch as death, when it happens in the acute infections, is due to the secondary infections by the ordinary infective agents, and not to the primary infection by the specific agent, which is true of all cases, barring malignant ones, the importance of this treatment becomes obvious, and its perfection a matter only of time and experience. In other words, since death, when it happens, is due to the complications and not to the primary disease, except in cases so malignant that they overwhelm the patient, the prevention of complications is the most important factor in treatment.

These complications are the result of secondary infection by the ordinary infective agents; and the germicidal treatment is employed for their prevention or their abolition.

To illustrate, allow me to relate this factor of treatment as applied by me in the Western Pennsylvania Hospital, for typhoid fever: The antisepsis is local, intestinal and general. All the orifices of the body are kept scrupulously clean and aseptic. The rectum is washed out, after each stool, with carbolized water. The external auditory canals with a saturated solution of borax in water, are then kept plugged with boroglyceride and cotton. The anterior nares are cleansed and disinfected with the same solution. The eyes are washed with the borax solution. The mouth, from three to twelve times daily with equal parts of borax and potassium chlorate dry, and the patient is made to gargle his throat. The

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patient has his sheets and body linen made antiseptic with bichloride of mercury. Intestinal antisepsis is practiced as follows: The fetor of the stools is abolished by iodoform or guiacol, and when the bowels are distended the subgallate of bismuth or charcoal is frequently given, or the patient drinks hydrochloric acid lemonade. This constitutes the local antisepsis, which protects the orifices of the body, its skin, and its intestinal canal — from what? From additional secondary infections which are not necessarily a factor of typhoid fever and which, if this antisepsis can be perfected, need not happen. By keeping the mouth aseptic a very perturbing, sometimes serious complication, parotiditis, is prevented. By the same means inhalation and deglutition pneumonias are prevented. Parotiditis and these pneumonias are caused, not by the typhoid infection, but by the ordinary infective agents, which may, in the manner indicated, be excluded. The same is true of abscesses of the frontal sinuses, middle ear inflammations, and rectal and vaginal sepsis, by keeping aseptic the various orifices through which these super-added and not necessary infections happen. By the intestinal antisepsis the fetid, toxic and readily absorbable contents of the bowels are made innocuous. Is not absorption of this matter otherwise unavoidable with the lesions of the mucosa in contact with the poisonous contents the bowel embraces? That this is the rule in typhoid is shown by the septic temperature curve common during the last third of the fever and by the additional temperature elevation which much increase the gravity of the case and not infrequently induce a fatal ending. It is to be remembered that although the typhoid bacillus finds its way into the body by way of the alimentary canal, this is not its habitat; its residence is in the glandular structures of the body, the agminate and solitary glands, the mesenteric glands, and the spleen. The condition of the intestinal contents is referable, therefore, not to the typhoid infection, but to additional infection and fermentation, which may be prevented or lessened by antisepsis of this canal. In addition antiferments are used to abolish or lessen intestinal distention, and it is conceivable how distention of the colon or ilium may cause perforation of the typhoid ulcer, which, without this, might not have happened.

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The general or constitutional antisepsis consists of the administration of calomel and iodine. The first is given during the beginning of the fever in moderate doses, irrespective of the presence or absence of diarrhœa — it does not increase it. Iodine is administered when the fever is fully developed; the stock solution is prepared as follows:

Iodine, gr. iv.
Potassic iodine, gr. xvi.
Syrup and water each two ounces.

Of this solution a teaspoonful is given every two or three hours.

This factor of treatment employed by me during the past winter is responsible for a mortality decidedly less than has ever been attained in the hospital. In addition one of the most fatal complications, common in typhoid fever, happened in no case. I refer to pneumonia, the secondary pneumonia called hypostatic and said to be due to weak heart and the dorsal decubitus. This, formerly so common in the hospital, was entirely absent during the past winter and my assistants, probably correctly, assert that such pneumonias demonstrated to be preventable are consequently not "hypostatic," but infectious, due to the ordinary infective agents, *i. e.*, inhalation and deglutition pneumonias.

This antiseptic factor of the treatment of typhoid fever further prevented the necessity for antipyretics; temperature elevation in typhoid fever being due to the secondary, as well as to the primary infections, and the secondary infections being prevented or abolished as indicated, left only the pyrexia caused by the primary infection, very moderate in most cases, and indicating means and measures for temperature reduction in none.

In the same way and equally due to the antisepsis, the whole course of the fever was rendered so mild that stimulants were quite uncalled for and not used. For the same reason diarrhœa required no treatment and the same is true of delirium and sleeplessness which were phenomenally rare.

From all this it necessarily follows that the feeding of these patients did not appear imperatively indicated. It was much modified as to the usual diet and quantity. Little milk was given; little meat broth; the patients received egg albumen in water and little else. The removal of the necessity for food during the fever

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is an undoubted benefit, inasmuch as its fermentation in the intestine producing distention and absorbable toxic products cannot happen when patients are not fed.

Additional secondary infections are prevented in the other acute infections in like manner. The common middle ear inflammations of scarlatina may be prevented by asepsis of the external meatus and the mouth, nose and throat; they are due to secondary infections which are preventable.

The fatal and dangerous complications of measles are likewise due to additional infection not of necessity present in measles. Of what do children die in measles? Pneumonia, croup and entercolitis, two of these certainly preventable, as I have indicated. Enough has been said to show the importance of this new factor in the treatment of these diseases; it is self evident that when the clinical experience shall have demonstrated and defined the ways and means by which this antisepsis may be perfected, when, in other words, all secondary infection will be prevented in the acute general infections, the mortality will be reduced in a ratio not approachable by any other means and measures of treatment.

I must guard against the misunderstanding that the time has arrived when we can rely solely upon this factor of treatment. It is not yet. We must still employ two other factors of treatment in these diseases. These are the proper and sufficient feeding and the general regimen of the patients, and the exhibition of certain remedies addressed to symptoms, conditions and events which exist in these diseases, *i. e.*, the expectant treatment. We have to do, therefore, with three factors which to-day constitute the treatment of the acute affections, namely, proper feeding and regimen, the expectant treatment of symptoms and the antisepsis. Again I must insist that the antiseptic factor in the treatment is in no wise a specific treatment; *i. e.*, in no wise a germicide addressed to the specific germ, but on the other hand is employed only to prevent or abolish secondary infections by the ordinary infective agents. The specific infection, the specific germ, is quite safe from our attacks; we have no known germicide which will destroy it, and the antiseptic factor of treatment accomplishes nothing but the protection of the patient from additional infection. Doing this, however, reduces mortality to an extent not approach-

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able by any other means or measures. Local and general antisepsis is the new factor of treatment which must be accompanied by the other two until it can entirely displace these latter; and this will happen when we discover germicides which will destroy specific bacteria as well as ordinary infective agents.

The next step in the order of progress is the selection from the large list of germicides of those most effective in accomplishing the destruction or limitation of bacteria, the neutralization of their toxins and the prevention of fermentation in all or in each of these acute general infections, together with the best manner of their use. At the present time bi-chloride of mercury stands first for local antisepsis as this is employed by the surgeon, but unfortunately this destroys animal cells as well as the low order of vegetables to which bacteria belong, and cannot therefore be used in quantity sufficient to accomplish the last without the first. The great desideratum is a destroyer of vegetable germs which shall leave animal cells unharmed. The pathogenic vegetables we seek to destroy are sometimes in the blood, oftener localized in certain tissues, but general antisepsis implies the penetration of the whole organism by the destroying agent, which must be therefore innocent to the animal cell; what is hurtful to a vegetable cell need not be hurtful to an animal cell; what will destroy the microbe need not necessarily kill the patient. A whole series of such pathogenic vegetables is destroyed by an agent indispensable to the life of animal cells, namely, oxygen. Small doses of silver nitrate, not at all hurtful to animal cells, prevents the growth of the aspergillus. Again, certain inferior vegetables thrive in media fatal to all animal life. From these and additional facts it follows that the therapeutic and the toxic action of all antiseptics are not equal; and that these actions also differ in proportion in different antiseptics. It is true that the cell envelope of inferior pathogenic vegetables is more difficult to destroy, has a much greater tenacity and resistance to all manner of attacking substances than that of the animal cell. The vegetable cell wall is cellulose, the animal cell wall is albumen. Innumerable agents easily destroy the last, while the first attacked by the same substance is able to resist them. But it is to be remembered that destruction of these low forms of vegetable life, though desirable, may not be essential to

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the abortion or cure of the diseases they induce; that this may certainly happen, if but their increase, their multiplication can be prevented. How the one or the other of these objects may be accomplished, and by what agents, the future has to instruct us; and when this shall have been done medicine will be in its golden era.

I am certain I express the sincere desire of this Society when I say that we who have so long hoped and prayed, who have so long earnestly and unremittingly fought death and disease with but imperfect arms, who have often triumphed over both, but have also suffered bitter defeat, I am certain I express the universal desire that we may all be armed with these new weapons before the time shall come when we must bid each other adieu, and shall need them no more.

TWO CASES OF DIPHTHERITIC CROUP.

By S. A. Spillman, M. D., Ottumwa, Iowa.

Case 1. December 22, 1893, while suffering from influenza, I was informed by Dr. L. J. Baker that he was attending a little boy about three years old who was suffering from diphtheritic croup, and as it was in one of my families, he very much desired me to see it with him. Early in November this same child had had an attack which I had pronounced diphtheria, but it was quite mild in character, and required but little treatment. When we arrived at the house we found the patient apparently breathing better, and decided not to intubate unless the symptoms became more urgent. During the night the child became worse, and the following morning the tube was introduced, the child being very blue, and in fact, apparently dying. After some moments of slow and labored breathing, it gradually revived, and was soon able to take milk in considerable quantities. It seemed to improve for some hours, but became worse in the evening, and after a bad night passed away in the morning, dying of exhaustion.

Case 2. On the 6th day of December, 1893, I was called to see ——, seven years of age, who had been complaining of headache and was supposed by her parents to be suffering from a cold. This had continued for four days, and the child was lying upon

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her bed, clothed in her ordinary apparel. The mother said, in reply to a question, that she had looked into the throat but it did not seem to be sore. On examination I found a small patch low down on each tonsil, glands of neck somewhat swollen, temperature 103 degrees in axilla, skin hot and dry. I pronounced the case diphtheria, and told the mother to disrobe the child and put her to bed; gave one-fourth grain doses of calomel every three hours till bowels were moved, spraying the throat with a fifteen grain solution of boracic acid. I ordered milk and eggs for nourishment and gave bromide of potash to procure rest. The next day I found my patient in much the same condition, but breathing somewhat impeded. The same treatment continued. The following morning I received a message to go at once to my patient, as she had had a bad night and they were afraid she would choke to death. I asked Doctor Ferguson to go with me, at the same time taking my intubation set. We found matters fully as bad as I expected, and, profiting by my previous experience, I decided to introduce the tube at once, which being done, my patient breathed easily, and was soon in a pleasant sleep.

At this time there was quite a little membrane in the throat, but the nares were not invaded. About this time my patient began to show signs of broncho-pneumonia. Her nourishment consisted of milk and egg-nog, which she took pretty well.

After leaving the tube in for six and one-half days I removed it and found its caliber was considerably reduced by accumulations upon the inside. I hoped now to get along without further use of the tube, but after one day the breathing became so difficult that I was compelled to reinsert it.

One day and a half more passed and I removed the tube finally, it having remained altogether eight days with an interval of one day. The laryngeal stenosis gave no more trouble, but the condition of the lungs gave me much concern for several days more, and the patient was not discharged till the early part of January. She was not able to speak above a whisper for eight weeks, but finally made a good recovery.

I have used the tube in several other cases, but these two were so similar, and yet the result so different that I have chosen to report them together.

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We read now of the wonderful results in the use of anti-toxin and of the almost immediate relief in the breathing where the larynx has been invaded. We all sincerely hope that it may be found reliable, but I have no doubt we shall still have to resort to intubation or tracheotomy in many cases.

As to the treatment of these cases, I think all are agreed that the nourishment is of prime importance. Small doses of calomel, especially in the earlier days of the disease — a spray of boracic acid or some other antiseptic — the internal administration of tincture of chloride of iron, and bromide of potassium to allay nervousness, are the general indications in these cases.

I believe in selecting a few remedies, and not annoying the patient with too great a variety. Hope and perseverance on the part of the physician may, in desperate cases, turn the scale in the patient's favor. Intubation or tracheotomy should be practiced before the patient shows much cyanosis or great exhaustion.

I wish in this connection to add a report of another case lately treated by Doctor Hansel and myself.

Case 3. Neal ——, aged three and one half years, exhibited signs of croup on March 21, and the doctor, who had it under treatment for eye trouble, prescribed for it. The following day I called in, and after examination, seeing only a little congestion of the mucous membrane of the throat, I prescribed as for an ordinary case of spasmodic croup. I heard no more from the case till the evening of the 25th, when I found such a serious state of affairs that I had to call Doctor Hansel. We could see nothing in the way of membrane, and, except for the difficulty of breathing, and a slight rise of temperature, there was nothing to indicate the nature of the trouble.

The case went along much the same till the night of the 27th, when intubation became imperative and was done by Doctor Hansel, with immediate relief in breathing.

About this time a culture was made from the mucus, which showed the presence of the Klebs-Lœffler bacillus.

The tube was removed and cleaned on the 31st, but had to be reinserted. A few small bits of membrane were at this time thrown up.

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On the evening of April 1st we introduced, hypodermically, ten centimeters of antitoxin. The following morning the pulse was found more rapid, the skin rather dry, the patient quiet and listless. Eight centimeters more of the antitoxin were introduced.

In the evening, there being some apparent improvement in our patient, the tube was removed, and the following day he was playing about the room and went on to a rapid recovery, eating heartily from that time.

It seemed in this case that the antitoxin was of great benefit, as evidenced by the rapid improvement.

DIPHTHERIA.

By J. P. Claybough, M. D., Creston, Iowa.

Mr. President: I wish to discuss for a few moments some points in the diagnosis and the effects on the laity of the modern treatment of diphtheria. It is sometimes impossible to make a diagnosis without a bacteriological culture. In every suspected case of diphtheria which shows a membranous deposit on the pharynx, larynx, tonsils or uvula, swollen glands, high temperature, or even low temperature, we can safely treat as diphtheria, and if the practitioner is happily surrounded by bacteriologists, wait for a culture.

In a recent article on the treatment of diphtheria in the *Medical Record*, Louis Fischer says: "How often has it happened, especially in newly formed pseudo-membranes, that no bacilli could be found, and how often can bacilli in older portions of the pseudo-membranes in almost a pure culture be found. So that we must not forget that technical error might be made in making cultures." Says he, "I saw a child with a severe form of septic diphtheria in which seven cultures were made on seven different days, showing the absence of Klebs-Lœffler's bacilli. This child died, and the post-mortem culture two hours after death was negative and still no membrane involving larynx and trachea were present and no bacilli could be found." This shows that isolated

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cases may give us some trouble in verifying our diagnosis. Therefore it is perfectly proper to rely on the clinical diagnosis, as in the case cited.

Those of us who have had recent experience with antitoxine or with Lœffler's solution in the treatment, have been greatly surprised at the way the diphtheritic membrane conducts itself. Let us take for instance Lœffler's solution applied locally to a diphtheritic membrane. It immediately destroys it or all that comes in contact with the medicament, and a part comes off at once with the cotton. The relief afforded is immediate and marked. If the patient is not poisoned by the septic conditions, in the blood, convalescence soon takes place. The membrane will reform again in two or three hours, but it can be readily destroyed, and here is the embarrassing feature. The neighbors and friends of the family begin to question the diagnosis and say they are getting well too fast for diphtheria. What is said of Lœffler's solution can be said with even more emphasis of antitoxin.

Under any other plan of treatment the membrane still forms. The system still absorbs the ptomaines and the patient gradually grows worse until the system is overwhelmed with the poison and the lamp of life is extinguished, or a slow and tedious convalescence is established. Under the use of these remedies, intelligently applied, the patient begins to improve at once, hence the necessity of being more guarded in our prognosis. Let the public know that we have made advancement in the treatment of this dread disease. Happily, indeed, our prognosis can be made more favorable.

My experience in the use of these remedies has in every case been successful. I believe that with the early application of them, diphtheria, like small-pox, will be robbed of its terrors.

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HISTORY OF INSANITY.*

By Frederic S. Thomas, M. D., Council Bluffs, Iowa.
Professor of Mental Diseases, Creighton Medical College.

IF INSANITY be a manifestation of disordered functional brain mechanism, it is presumable that the genus homo, being endowed with brains, has been from the earliest period of its existence, liable to become insane.

Kellogg says, in speaking of the historical aspect of this disease: "Religious and philosophic hypotheses determined for long ages the civil and social status of the insane, and the whole manner in which they were to be dealt with, as well as the means to be taken for their cure."

There can be no doubt that the Egyptians were somewhat familiar with the phenomena of insanity. Moses, educated at the court of Pharoah, threatened the children of Israel with insanity as a penalty for their disobedience.

It is worthy of notice that the care of the insane is not a part of the Mosaic law. In fact the Old Testament, while recording the earlier cases of this malady, gave no rational account of how they were treated, if indeed any treatment was attempted.

Saul, the first king of Israel, after having been successful in a series of victories over the Ammonites, Moabites, Syrians and Philistines, as well as over the Amalekites, became troubled in spirit and lost his reason. He was solaced by the music of the harp of David, and became well again.

Six centuries before Christ, the Chaldean king, Nebuchadnezzar, after taking Jerusalem and carrying many of its chief people away captives, fell under "divine judgment" and "was driven from men and did eat grass as oxen, and his body was wet with the dew of heaven, till his hairs were grown like eagle's feathers, and his nails were like bird's claws."† He recovered, and again sat upon his throne.

*Read before the Iowa State Medical Society, April, 1895, at Creston, Iowa.

†It has been thought that his malady was a form of madness called "lycanthropy," in which the patient imagines himself a beast.

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Cambyses (called Ahasueras in the book of Ezra), the second Persian king, conquered Egypt and took their king captive. He afterwards led his army against the Ethiopians to take possession of their temple, Jupiter Ammon, where many perished of hunger in the sands of the desert. This disaster deprived him of his senses, and his subsequent conduct was that of a madman. It was also said of him that "from his birth he was subject to fits of epilepsy, called at that time the sacred disease."

In the writings of Plato we find "expressions of opinion in regard to the prophetic power of madness," which he also looked upon as a sacred disease and full of blessings.

It is recorded that one of the distinguished Greek chiefs in the Trojan war was Ajax, before whom "Hector retired upon more than one occasion." After the death of Achilles the arms of the hero were to be allotted to him who had deserved best of the Greeks. "Ajax and Ulysses made claim for their possession, and they were adjudged to Ulysses, whereupon Ajax went mad, and after committing many excesses, slew himself.

To the great Hippocrates must be given the credit of first clearly propounding certain important truths regarding insanity. He taught with wonderful clearness that the "brain was the organ of the mind, that it was subject to the same physical laws as other organs of the body." This, along with his "humoral pathology," was for many years the accepted medical doctrine, and they were enlarged upon from time to time.

Even the enlightened views of this great physician did but little toward rescuing this unfortunate class from the superstition and bigotry of the priestcraft of his time.

Even the Jews, who claimed to be the chosen people of God, only recognized in the insane "manifestations of evil spirits, capable of entering into and controlling the speech and actions of human beings."

The Christian church, organized by the disciples of Christ, regardless of their associations with this most exalted advocate of the doctrine of "peace on earth and good will toward men," brought forward the same Judaistic doctrine regarding the insane, and their treatment by flagellation, starvation and other religious

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exorcism, added another chapter to the horrors of the beginning of the Christian era.

The doctrine of love was lost in the gloom of this period, and the poor victim whose reason had been lost was overwhelmed by the cruelty of his time. Many beliefs that had been entertained for so many centuries by the Jews, especially concerning disease, were carried along in the evolutionary process from Judaism to Christianity, all of which was rational when seen in the light of its surroundings.

Let us consider three men who attempted to bring order out of chaos.

Aretæus and Cælius Aurelianus, during the first century (A. D.) rejected much that had been taught, and portrayed more definitely the general symptoms as well as the course and prognosis of insanity.

During the second century Galen described mania, melancholia, dementia, and imbecility. He also differentiated between insanity and the delirium of fever.

These somewhat enlightened views, which began to have a a hold upon the medical mind of this period, as well as to make an impression upon the more intelligent portion of the masses, were destined not to endure.

In the fifth century came the downfall of the great Roman empire. Civilization was compromised in this great historic calamity. Gross ignorance and superstition stalked hand in hand, like a gaunt monster; and among their victims were the members of this unfortunate class of which we write.

Should we wonder, then, that the condition of the insane became more wretched, if possible, than at any previous time.

They were again supposed to be possessed of devils, and the torture employed upon them was of the most horrible and ingenious character.

It was not until long after the Reformation, and the revival of letters and of science, that there was any real improvement in their condition. Although buildings were erected in Italy, in the latter part of the fourteenth century, and in Spain a decade later, for the special reception of the insane, they were but little better than prison houses.

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From the fifteenth to the eighteenth century, more than fifty thousand persons were formally executed as witches, and out of this number, many were insane.

It must be remembered that during the middle ages, the concrete sciences had but a feeble existence. Of the abstract sciences, mathematics and psychology were the ones especially cultivated. Modern science did not appear until the seventeenth century, and was heralded by Kepler and Galileo.

Descartes was the founder of modern philosophy, and Bacon's inductive method and scientific empiricism in the study of nature, aroused the thinking world. The publication of Harvey's researches on the circulation of the blood, and the philosophy of Leibnitz, furnished further proof that a new dawn was fast approaching upon a world long cursed by ignorance.

It still required many years and much study by men like Stahl, Heimroth, Nasse, Vering, Pinel, Esquirol, Cullen, Arnold, Bucknill and Tuke, to bring the subject of insanity to anything like a rational basis.

While to-day, our knowledge of this most interesting subject is in a measure limited, we believe it can conscientiously take its place with other departments in medicine.

Fortunately for our race, the accumulation of knowledge and the bright light of science that has so graciously dawned upon mankind have rent the veil of ignorance in twain.

The ancestral notions of the spiritual character of insanity are no longer believed by the intelligent.

Considering insanity in the light of the past, we can but congratulate ourselves that medical science has robbed it of much of its terror.

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THE COURSE AND DIAGNOSIS OF INSANITY.*

By Frank C. Hoyt, M. D.,
Superintendent Iowa Hospital for the Insane, Clarinda, Iowa.

Gentlemen,—"The Course and Diagnosis of Insanity," the subject assigned to me by the chairman of this section, cannot be properly considered in the time allotted to the reading of a paper. I can, therefore, only treat of the subject in a cursory way, and ask your forbearance should my paper prove incomplete and unsatisfactory.

An insane person may well be likened to a ship without a pilot and with a broken rudder. Just as a certain number of such disabled vessels will be quickly dashed to pieces on the rocks, and as many more will float about the ocean highway as derelicts, useless and dangerous, while a very few may, through Divine Providence, reach harbor in safety, so a certain number of insane persons will succumb quickly to the attack, a larger number will become chronically insane, while others will recover.

The course of insanity is equally uncertain as that of the disabled vessel, and one must be venturesome indeed who would attempt to forecast the future of an average case. It may be said that the course of insanity in general is largely toward chronicity. The greater number of cases of insanity which recover do so in the first six months after the attack, while about 25 per cent of those who recover do so in the second half of the year, and not more than 5 per cent after the second year. Out of 2,543 cases discharged recovered, the statistics of which I compiled, 62 per cent were of one year or less duration. In 19 per cent this duration was more than one year and less than two years. In reference to the number of cases which assume a chronic state, a review of the same statistics shows that out of 10,780 admissions, 16 per cent were discharged unimproved. Of those remaining under hospital care 80 per cent were considered non-recoverable cases. This marked tendency toward chronicity is not as surprising when it is considered that the major portion of our insane

* Read before the Iowa State Medical Society at Creston, Iowa, April 18, 1895.

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population is recruited from those classes of society in which the members are illy-balanced, untrained and of a congenitally defective type.

The subject of the differential diagnosis between the various forms of insanity is too voluminous for consideration here and merely the primary diagnosis of insanity will receive attention. In many cases of insanity, especially those suffering from profound melancholy or acute delirious mania, with all the mental and physical symptoms which accompany these forms, the diagnosis is not difficult. So also in cases of epilepsy, in which there is evidently a beginning dementia, or when the seizures are followed by a post-epileptic furor. Epilepsy of long duration is so inconsistent with a normal mental condition that an examiner would not be far wrong did he commit as insane all cases in which the existence of frequent seizures for a period of many years was proven.

On the other hand in cases of paranoia, delusional insanity, and the incipient stage of general paresis, the diagnosis is often very difficult. In conducting an examination in which the sanity of a patient is questioned, the physician should first of all obtain a full and accurate statement of the family history of the patient, with special reference to the presence of insanity or nervous disease in his genealogy. It will be found that the members of the family will often deny the existence of any hereditary taint and no little tact will be required to elicit the desired information. After this the history of the patient prior as well as subsequent to the attack should be obtained from those who have been most intimately associated with him. His normal habits of life, his peculiarities and eccentricities, his emotional tendencies and his general mental organization should be studied. It is at this stage of the examination where may be applied the most accurate and reliable test in the diagnosis of insanity. I refer to the comparison which is to be made between the known normal condition of the patient and his present mental state. Had we knowledge of an ideal man whose mind was perfect beyond all doubt, we would have a standard with which we might compare all cases brought before us. But in the absence of any such standard we must reach our conclusions by carefully weighing the present mental

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condition of the patient on one side of the scale, while on the other we place his mind as it was when reckoned normal. I can illustrate this point no better than by quoting Clouston, who regards these questions of most vital importance: "What sort of a man was this when regarded well in mind? How does he differ from his state then? Are his present mental peculiarities evolutions of his temperament? Are they connected with his diathesis? What is the exact nature of the mental disturbances present? Is there general mental exaltation, depression or enfeeblement present? What physical functions are disordered along with the mental? Are any of the great functions of the nervous centers, such as motion or sensibility, impaired?" etc. "This is the clinical mode of studying mental disease, founded on a physiological basis. It implies something far more than merely classifying the mental symptoms of your patients, and ticketing the various groups with a name."

If a man formerly penurious and exacting suddenly becomes profligate and extravagant, or one previously devout has become profane and blasphemous, or if a chaste wife and mother becomes obscene and lewd, it should mean more to you than a mere episode in the life of your patient and should direct your attention to his mental condition. In the direct examination which should be made in all cases, the examiner should endeavor to gain the confidence of his patient. No surer way to acomplish this can be found than by avoiding all deceit. It is extremely rare that the physician is justified in deceiving his patient, and usually a more satisfactory result will be attained if the examination is conducted in a frank and honorable manner. If the friends of the patient have given you a hint as to the false beliefs held, you will have no trouble in confirming them. Occasionally, however, a controlling delusion will exist and is evidenced by the demeanor of the patient when the closest questioning and most adroit methods will fail to unmask it. The examiner should be as good a listener as a talker and, if given an opportunity, the patient will not infrequently air his vagaries without assistance. An examiner who is himself garrulous and searching in his questioning will place the patient in a defensive attitude and fail to satisfy himself or anyone else as to the mental state of the patient. In a

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quiet way the patient's memory, judgment, will-power, emotions, and imagination should be examined and estimated.

The physical examination should be as thorough as possible and the condition of the nutrition, secretions, excretions, reflexes and the nervous system in general, carefully observed. Often, however, notably in cases of delusional insanity with persecutory delusions, a methodical physical examination will increase the mental unrest and augment the delusions. In such cases the insanity will be satisfactorily proven by other evidence, and the physical examination should be deferred until the patient is in a more favorable state of mind. The examination should always be sufficiently thorough to exclude the delirium of typhoid fever, cerebro-spinal meningitis, tubercular meningitis, intoxication, etc. I have several times received patients who had been adjudged insane and when admitted were found to be suffering from the delirium of acute febrile diseases or intoxication. To exclude such conditions requires only ordinary care, and to err in this regard is to endanger the life of a patient needlessly. A popular fallacy is the fancied necessity for determining whether a delusion has a substantial basis or not. Some examiners thinking that if such a basis be found, the question of the patient's sanity is negatived. To the contrary it is of daily occurrence that patients manifest delusions founded on a substantial or real basis, and yet the superstructure is insane. This is particularly true of the delusions held by melancholiacs, for we frequently find that the persecutory delusion springs from actual troubles and have been exaggerated until the mole hills of a normal mind are magnified into the mountains of a brain distraught. Another symptom, so called, of insanity, is I believe without merit or foundation, that is the insane odor spoken of by many writers. This odor is regarded so characteristic by some alienists that they claim to be able to detect insanity in many cases through this means alone. I am positive, however, that the peculiar odor ascribed to the insane, is a complex odor in which the component parts are garments saturated with urine, filth, particles of food and divers forms of organic matter. Add to these, unclean teeth, foul breath, decomposing secretions from the nasal mucous membrane, vaginal discharges, etc., and I think the "insane odor" is resolved into personal uncleanliness, and can be

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removed by liberal applications of soap, water and clean clothing. Insane hospitals when impregnated with this "distinctive odor," will be freed from it if the faults in plumbing, ventilation, unclean floors and beds are corrected.

There is much yet to be said in connection with the diagnosis of insanity, and particularly in the detection of malingerers who simulate insanity in order to escape justice, but the length of my paper prevents me from touching this interesting subject.

In conclusion I wish to add that the diagnosis of insanity would be less difficult to the non-expert, if it were remembered always that insanity is not synonymous with raving madness as pictured by the imagination of the laity; and that to be insane a person need not be unreasonable in all of his actions or thoughts, or that he must manifest his insanity at all times or in all places.

Spitzka says that — "The mind of an insane person may be, and in some instances is, a more elaborate mechanism, one with more individual components, and of consequent wider scope as to its combinations, than the mind of many a sane person. But the mental factors of a healthy, inferior mind if fewer in number and simpler in their associations, are well arranged and united into a consistent and continuous ego. It is the failure to effect this union that constitutes the chief element of what is so aptly called alienation."

PROGNOSIS IN INSANITY.

By Gershom H. Hill, M. D., Independence, Iowa.

WEBSTER says that prognosis is the act or art of foretelling the course or event of a disease, and that insanity is unsoundness of mind. Then the task in hand is to predict how the various cases of mental unsoundness will proceed and terminate. This subject cannot be treated in an exhaustive manner without trespassing upon the other topics named in this section of the program. For other reasons the observations made and the conclusions reached concerning the prognosis in insanity will be general.

Anæmic persons, and others who are "below par" physically on account of nervous debility, may sink into a morbid condition

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of the mind akin to insanity. If the cause is understood, the danger appreciated, the individual takes suitable medical treatment, and is able to pursue the course which will give relief, then equanimity may be speedily restored. Persons who are in their prime and the pictures of health, sometimes become oppressed by untoward conditions in their business or in their social or in their domestic relations. They ask themselves, "Is life worth living?" Natural mental stamina or moral obligations or a "friend in need" generally determines this question.

Of all the forms of mental alienation or insanity only the generalized types, namely, mania and melancholia, are curable. The systematized insanities are essentially chronic, and recover only very exceptionally. Indeed, while we can count only about one cure to every eight or nine cases of insanity taken at random, this proportion changes to about one in three or even more if we exclude the forms which are always incurable.

The more acute the generalized insanity, the more favorable its prospects. Hence it follows that, of all forms, acute mania and melancholia are the most curable. It is claimed that in acute mania there are at least seven recoveries out of every ten cases.

The less generalized and intense the mania or melancholia, the less is their chance for recovery. The more sudden the onset of the disorder and the quicker it reaches its greatest height, the better are the chances of recovery. And *vice versa*, the longer the period of incubation and the more lingering the progress, the more serious are the prospects.

The cause of the disease has also an influence on the prognosis. In general, a single and accidental cause leaves good chances for recovery; multiple and permanent causes have an action directly opposite.

The age of the patient is a matter of importance; the younger he is, as a rule, the better his chances. Sex has likewise some influence: women, indeed, recover more often than men, a fact due largely to the rarity in them of general paralysis. To make up for this, they are more often subject to relapses. The cause, however, inherent to the patient, which has the greatest influence on the prognosis, is, without question, the absence or existence of predisposition or heredity. Not that the subjects of heredity and

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the predisposed recover less readily, but because that in them the cure is seldom complete and permanent.

Recovery in insanity bears an inverse ratio to the duration of the derangement. The prognosis is more unfavorable when the mental alienation develops gradually than when sudden in its manifestation. Patients are more likely to recover from the first attack than from subsequent ones and the more frequent the periods of derangement the less likely is the mind to be fully restored. If the family is poor and if the relatives are not adapted to the management of a case of insanity the prospects for speedy restoration of the case are not so bright. Again, the habits of the patient must ever be kept in mind. If he will not take medicine then the best prescriptions do no good. If the patient refuses nourishment, general debility is sure to increase. If a fair amount of sleep is not secured, nervous prostration or delirium is likely to ensue.

If the cause of insanity is one which cannot possibly be removed or made less potent, then the prognosis is unfavorable. A person may have miserable health and still be perfectly sane, but if an insane person is also an invalid then the health must be restored before the mind will return.

If a case of acute mania or of melancholia becomes fat and ruddy and strong, if the catamenia are restored, if the patient eats and sleeps well without medicine, and yet does not show decided improvement in the mind, then the case is probably passing into one of permanent dementia.

The prognosis is unfavorable so far as *duration* of life is concerned if the patient has well developed tuberculosis or heart disease. The same is true if the derangement is in an old person who is suffering from an attack of cerebral hemorrhage; since the clot formed in the region which has become necrotic from a lack of nutrient blood may speedily pass into a condition of cerebral softening.

Concerning some of the special forms of insanity it may be briefly said that puerperal mania, whether of the maniacal or of the melancholy type, if treated promptly and carefully, is almost always cured within a few months in the home of the patient; on the other hand epileptic insanity, paranoia, paretic dementia and the failure of the faculties on account of old age, are almost never restored.

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TREATMENT OF INSANITY.

By Edward Hornibrook, M. D., Cherokee, Iowa.

A DEFINITE knowledge of what insanity consists is essential to a rational discussion of its treatment. The ancient medical writers taught that it was of corporeal origin. Mysticism and superstition, in the middle ages, evolved the theory that its cause was psychical or immaterial.

Macbeth, who was king of Scotland in the eleventh century, is represented by Shakespeare as holding this opinion when he proposes this question to his physician :

> "Canst thou not minister to a mind diseased,
> Pluck from the memory a rooted sorrow,
> Raze out the written troubles of the brain,
> And with some sweet oblivious antidote
> Cleanse the stuffed bosom of that perilous stuff
> Which weighs upon the heart?"

This theory is still held by many of the laity as well as by some members of our own profession. A learned and accomplished physician consulted me recently about his wife's mental condition. I attributed her alienation to physical causes, when I was somewhat curtly told that I appeared to have entirely overlooked the mental disease which, in his opinion, could and did exist entirely independent of any bodily disease, and without any alteration or perversion of the material functions of her physical organism. I informed him that the immaterial mind was "beyond my ken," and that with my limited capacity it was impossible to conceive of the existence of an insane mind in a perfectly healthy and properly developed physical organization. The brain is the organ through which mental phenomena are manifested and it is with the diseases of this organ, and the perversions of its functions the physician has to contend, and not with that which is intangible and inscrutable, and yet of the existence of which we are all conscious.

An authority defines insanity as "consisting in morbid conditions of the brain, the results of defective formation or altered

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nutrition of its substance, induced by local or general morbid processes, and characterized especially by non-development, obliteration, impairment or perversion of one or more of its psychical functions."

In other words, mental perversions and alienations are but symptoms of bodily diseases.

The treatment of insanity, therefore, resolves itself into the treatment of pathological conditions. That insanity may exist during life and no cerebral lesion be found after death is not proof that the perversion of function was not caused by disease. Many mental perversions have been traced to abnormal conditions of the brain, and it may be safely assumed that with increased knowledge aud improved methods of investigation all mental aberations will be found to be associated with diseased conditions or caused by reflex irritation from disease or injury of the remote organs of the body.

If the theory of the physical basis of insanity is accepted it follows that it is not a simple condition but comprises a large number of functional and organic diseases of the brain and nervous system together with numerous reflex irritations which disturb the equilibrium of the organ of thought.

To discuss the treatment of these multi-form and varied conditions, as well as the treatment of inherited and acquired diseases which primarily and secondarily affect the development and functions of the brain and nervous system, would require a volume instead of a paper with a time limit of twenty minutes.

To undertake such a task would be as futile as it would be if a candidate for a state license should attempt to describe the brain, or peritoneum, or give a list of the specific diseases with their symptoms and treatment in the time allowed for that purpose ; and, therefore, I shall not trespass on your time with details which can be found in the text-books.

Enough has been said to demonstrate that the treatment of insanity is but the treatment of pathological conditions and functional disturbances, and therefore the therapeutic and hygienic measures of the alienist differ in no essential manner from those employed by the physician in ordinary practice.

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Lady Macbeth's physician instructs the attendants to

"—— Look after her,—
Remove from her all causes of annoyance
And still keep eyes upon her."

They were wise directions and no doubt all that science could direct or humanity dictate at the time the dramatist intended to represent. Have we made no advance? Have the attendants upon the insane performed all their duty when they have obeyed his injunctions? Is there no more to be done? Could nothing be done to divert their thoughts from their mental agony or the remembrance of their own real or imaginary crimes.

Mental aberrations are like love in one respect. They "grow by what they feed upon." If the mind can be kept from pursuing its own delusions and dwelling upon its own miseries, nature has a chance to repair the lesions which cause the mental impairment. If a wagon runs continually in the same rut the crease will deepen, but if traffic is suspended or diverted into new channels the old ruts will fill by gradual accretions and the action of the elements. Directing the thoughts into new channels leaves the old ones unused and gives the diseased parts the repose required for repair. If an inflamed joint is rendered immobile nature does the rest. Cerebration cannot be controlled by mechanical means like the movements of a joint. Sedatives and narcotics may control it for a time, but their use cannot be continued or they will cause deterioration where the object of treatment is to build up, repair and strengthen.

Diversion of mental activity and nervous energy into new channels seems to be nature's method of preventing as well as curing insanity. Mental perversions are often manifested in women at the time the maternal instinct fades and the reproductive function ceases. Unless their thoughts and energies are diverted into new channels they often lose their mental balance. Something is required for the employment of the force and energy hitherto expended upon maternal duties and the functions of reproduction. They often find the requisite diversion in charitable work, missionary work, religious work, or temperance work. Even if their labor is often tinctured by bigotry and fanaticism it affords

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diversion for their thoughts, and a safety valve for the expenditure of energy till now required for other purposes. A large part of the so-called philanthropic work of the world is done by women at this period of their lives. Those who do not find unselfish employment are apt to degenerate into hopeless invalids or chronic fault finders — a perpetual menace to the harmony of the family and the peace of the community. Watching the progress of mental deterioration in such women led an able secular writer to characterize insanity as "intensified selfishness."

This is the greatest mental crisis in a woman's life, and when she bridges the chasm by engaging all her faculties in unselfish work she affords a striking example of the benefits of intellectual diversion and the vicarious utilization of forces no longer required for reproduction or maternity. Many who fail to find this diversion swell the ranks of incurables in insane hospitals.

A young lady school teacher was brought to me about eight years ago whose delusion was that her hands were stained with blood, and that the odor of blood emanated from them. The delusion did not trouble her while engaged in the school room, but returned when she reached her home. Unless some stranger called, she spent her time washing her hands and trying to destroy the odor of blood. But like Lady Macbeth, she might still say: "Here's the smell of blood still; all the spices of Arabia will not sweeten this little hand." I could find no other evidence of organic or functional disease, and therefore prescribed no medicine, but directed her mother to keep her constantly employed. She was fond of music, and instead of allowing her to go to the lavatory, her mother insisted on her playing the piano till supper was ready, then her father compelled her to ride on horseback or drive until she was tired enough for bed. In the morning she was compelled to do housework before school time. This, varied with evening entertainments, occupied all her time while out of the school room. In a few months her delusion vanished and has not returned since.

I do not assume that all cases of "paranoia" could be cured in the same way, but I have observed many with similar symptoms develop into incurables where treatment by medicine without an effort to divert the thoughts was adopted.

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Properly directed treatment when the first symptoms are exhibited may obviate the necessity for confinement in a hospital. The over-worked may be rested and the system built up by tonics, generous diet, and changes of air and climate. The over-worried may have their thoughts diverted into new channels by amusement and travel. Brains suffering from inanition because the muscles are not exercised enough to promote assimilation may be benefitted by massage, electricity and work. In insanity more than any other disease, the doctor's advice is more useful than his medicine. In the management of these unfortunate cases there is scope for the ripest experience combined with the rarest skill and the soundest judgment. The gravest responsibility attaches to the commitment of patients to insane hospitals. To be officially declared insane, casts a cloud over the remainder of life, and leaves the stigma of hereditary insanity upon their posterity. Therefore, in suitable cases, every means should be exhausted before such a course is taken. So long as the thoughts can be diverted from that introversion, which is the prominent characteristic of all forms of insanity, so long as the patient is not dangerous to himself and to others, so long as he can have suitable environment and proper care, home treatment may be successful in curable cases. Time and proper care is so large an element in the treatment of this disease that few can bear the expense of home treatment. Those who often require months or years of seclusion, watching and sometimes physical restraint, should for obvious reasons be sent to a hospital; but the case of transient mania or melancholia or puerperal insanity, or one suffering from the mental weakness which often follows exhausting diseases or severe nervous shock, may for a time, at least, be treated by the family physician.

Separation of the insane from family, friends and loved ones is thought by some to be a severe trial to the afflicted. The facts are that family, friends and loved ones are often the worst companions, and the least likely to promote that self-restraint which is essential for mental restoration. The terror which they can inspire and the annoyance which they can cause seems to stimulate extravagances of conduct, which they will not practice when surrounded by those they can neither frighten nor annoy. Their ingenuity in devising means to give pain to those who love them, surpasses

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comprehension. It often happens that the noisy, obscene and apparently dangerous, will become quiet, chaste in their language and tractable when they learn that their conduct inspires neither terror nor disgust.

The three state hospitals for the insane are conducted in such a manner as to convince the observer that their managers are doing the best they can under the circumstances. When the state can be induced to supply each of them with an industrial building of sufficient capacity and adequate appliances to furnish employment for all who are capable; when funds can be had to supply the wards with musical instruments and competent musicians; when flowers and paintings can be distributed in some profusion throughout the building, and when trained nurses and attendants have greater facilities for diverting the minds of the inmates, better results may be expected from hospital treatment.

These great hospitals with their sanitary facilities and humane and intelligent supervision are magnificent monuments to the intelligence and liberality of the people of the state. There is reason to hope that the humanity and liberality which has brought them to their present efficiency, will not cease until they are provided with everything which science can suggest and philanthrophy devise for the care and treatment of those whose deplorable condition can be best ameliorated by the gentle restraint and careful management of those whose training has fitted them for the work.

Time forbids a longer discussion of the subject. I am aware that my paper on the treatment of insanity is like "the play of Hamlet with Hamlet left out"; but I have redeemed the promise hastily made to the chairman of this section, and I hope your patience has not been over-taxed.

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REPORT ON GYNÆCOLOGY AND OBSTETRICS—COMMENTS AND SUGGESTIONS.*

By H. Landis Getz, M. D., Chairman, Marshalltown, Iowa.

THE varying positions, presentations and stages of labor have necessarily remained the same, for the same reasons as have the functions of muscular, nervous and other systems throughout the period of the existence of the human family, *i. e.*, these are natural processes and cannot be influenced during the period of gestation, more especially because, primarily, the causes cannot be determined, and also because the course of gestation would be interfered with and miscarriage or premature labor result.

In the modern aseptic or antiseptic midwifery we also find nothing which influences these, the foregoing stages and conditions. It is therefore of necessity the course and management of labor and the after care of the patient which more especially concerns the obstetrician.

In the manipulation of malpositions, the rules for procedure remain practically the same, and are fully given in the text-books of the day. The questions concerning us, more especially, are, how much manipulation may or should be done in a case of normal labor? How much and what kind of aseptic or antiseptic practice should be applied before, during, and after labor?

A wide difference of opinion, as well as practice, prevails at this day, even with the well-known and fully established results of modern aseptic and antiseptic midwifery.

It not infrequently happens that the obstetrician reaches the patient in a stage of labor where vaginal douches and the local aseptic precautions cannot be applied to the patient prior to the birth of the child. This, however, is no excuse for him to do more than care for the infant, keeping his hands meanwhile from the vagina, and especially from a lacerated perineum. The cord may be ligated, cut, and the child taken away.

Now, before touching the patient per vagina for purpose of removing placenta or for other reasons, the hands should receive,

* Report on Gynæcology and Obstetrics, by H. Landis Getz, Marshalltown.

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first, the same careful preparation as if a laparatomy or other important operation were to be performed, and now the external genitalia, pubes, thighs, perineum and nates of the patient, in the order named, should be thoroughly prepared as for surgical operation. Following this the vagina should be douched with antiseptic solution and gently, but thoroughly, washed with the index finger, protected with clean gauze, of the practically aseptic hand. The hand is now again cleansed, and if the placenta cannot now be easily removed by Crede's method and slight traction upon the cord, the hand may be passed sufficiently far into the vagina or uterus as may be necessary for the purpose of making clean and thorough delivery of placenta. This course, followed carefully in the delivery of placenta, is preferable to any other, because shreds of membrane or portions of placenta can scarcely escape the obstetrician's notice through touch.

Should the obstetrician arrive at the patient's bedside before labor has reached the second stage, then the preparation should be as already indicated, except that the vagina should receive proper cleansing treatment prior to birth of child.

Now, the labor completed, if any surgical operation be required, the same must be done as carefully as any other surgical procedure would receive. No injections, either vaginal or uterine, are required if the case has been treated as already indicated and all conditions observed for at least twenty-four hours after labor. From this on may be used daily injections, vaginal, at blood heat, of a solution of chloride of sodium, a teaspoonful to a quart of water, once or twice daily, or of carbolic acid; or if lochia are malodorous, a weak solution of potassa permanganas or lysol.

The vulva should always be protected with antiseptic gauze or cotton of some kind, and frequently changed. Soiled cloths must *never* be used for this purpose. A quantity of antiseptic gauze should form a part of every obstetrician's armamentarium, to be used during the course of labor in covering all the parts adjacent to the vulva, and for post-labor dressings.

For ordinary use during the labor thoroughly washed and clean linen or muslin may in a few minutes be prepared by wringing them from a corrosive sublimate solution.

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If a lubricant be used during labor, among the best are, perhaps, carbolated petroleum preparations.

With these rules well observed there will seldom, if ever, be found occasion for intra-uterine washings, curretting or other treatment during the lying-in state. With the care given the obstetrician and the patient as already indicated, all manipulation may be done necessary to note the course of labor or necessary to aid the progress of the same, without danger of infecting the patient.

A short linen coat or sleeve-apron should also be a part of the obstetrician's outfit, and must in every case be clean. This is as much a necessity in obstetric practice as in surgical.

The modern obstetrician has more pleasure in aseptic than in antiseptic practice, and the patient enjoys it more because she suffers less.

Statistics in obstetrics show a slightly diminished mortality from puerperal fever, when lysol is used instead of corrosive sublimate. Experience teaches that intra-uterine injections of corrosive sublimate, post-partum should be used (if used at all) with much caution, and not stronger than 1 to 5,000 or 6,000.

Chloroform is still regarded as the best adapted anæsthetic in obstetric practice in general. Ether may, however, be sometimes advantageously substituted where prolonged obstetrical operations are necessary, especially where disease of heart or lungs exists.

Chloroform is not contra-indicated in albuminuria or eclampsia, but on the contrary is found beneficial.

Ergot, while still advocated by some, is less recommended and in its stead the use of strychnia is becoming more popular to aid the completion of a natural labor. The judicious use of obstetric forceps should supplant either of these remedies.

Intra-uterine injections, for the purpose of increasing uterine contraction and hastening labor, should be invariably condemned. Never neglect or forget to attend to the emptying of the bladder before delivery, especially if forceps are to be applied high up.

Gynæcological.— Where not a reasonable probability exists, that the cervix may be restored by Emmet's operation, it is recommended that the cervix be amputated by galvano-cautery. The result is no barrier to conception, gestation or delivery.

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Electricity is gaining more favor in the treatment of metritis and endo-metritis. Alexander's operation for retro-displacement of uterus is continuing to fall into disfavor and ventro-fixation bids fair to follow a good second.

Badly retroflexed and proplapsed uteri, especially when found in women past childbearing period, and dependent upon physical labor for a livelihood, continue to be removed by vaginal hysterectomy. In this operation clamp forceps are gaining favor over ligatures. The conservative gynæcologist does not now perform a hysterectomy for every uterine growth, however small.

In malignant disease of the uterus the best results usually follow the complete removal of the organ, preferably vaginal, if the size of the diseased organ will admit, otherwise by abdominal method.

The importance of adoption of thoroughly aseptic practice in all gynæcological operations must necessaaily become daily more manifest to even the most careless of observers.

Resection of the ovaries is recommended by Pozzi, where the organ is only partially diseased. Pelvic massage is highly recommended and well merits a careful trial in most cases of gynæcological affections, when properly applied ; is without danger, and should be given trial in at least all moderate uterine displacements before Alexander's operation, ventro-fixation, hysterectomy, or other mutilating operations be resorted to.

Urethral caruncle is still regarded as best treated by excision with knife or scissors or cautery. The operations of Tait and Martin for restoration of ruptured perineum continue to find their individual preferences. An operation recently devised by Stehman, of Chicago, commends itself in the restoration of vesico- and vecto-vaginal fistulous openings. It consists in making an incision through the mucous membrane at a point removed, and as may be necessary, from the rent or opening, carefully dissecting up the mucous membrane from the cut, toward and fully to the margin of rent or opening, now turning the dissected membrane into the rent or opening. This leaves the denuded and fresh surface of the membrane upturned, and the edges of the cut from which the dissection was started are now drawn together over rent or opening by sutures.

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The removal of pelvic organs in the diseases of women through the vault of the vagina has been steadily gaining ground since Pean's work was begun in this direction, in 1891, and is strongly urged by prominent gynæcologists of to-day. Claims made for the advantages by this method over abdominal section are a lower mortality, and a shorter period necessary for recovery of the patient. Small cysts of the ovary, as well as large ones, without high adhesion, parovarian cysts, fibroid of medium dimension, may all be removed by the vagina, with or without total extirpation.

R. Stansbury Sutton states that he has seen Jacobs' patients sitting about the wards and rooms knitting on the eighth day after total extirpation, also that he has seen them in the garden in ten days. A new operation for retro-displacement, first done by Mackenroth, of Berlin, in 1892, *i. e.*, the fastening of the anterior surface of a portion of the uterus and a portion of the neck to the anterior vaginal wall, is gaining in favor. Its real merits, however, are not fully established.

Vaginal hysterectomy by eneucleation and without clamp or ligature is regarded by some as the ideal method.

Apostoli and many others continue to laud electro-therapeutics in gynæcological practice, and since their reports and arguments should not be doubted more than the reports and arguments of the gynæcological surgeon, the claims made by the former surely merit the careful consideration of the latter, and the conservative gynæcologist will gladly hail the continued reports, truthful, of the electro gynæcologist. Among the more recent additions to electro-therapeutics is what is known as the alternating sinusoidal current introduced by D'Arsonval. The author claims for the currents developed from this apparatus new forms and reactions much different from those usually obtained from the apparatus hitherto known. Cataphoresis in gynæcological practice is gaining favor and is highly recommended by Croskey and others. Claim is made that cures may be accomplished in one-third the time required by any other method. Wallace Briggs claims for cataphoresis results superior to those obtained by curette, injections, cauterization, douches, or simple electricity. Thus, briefly have I sketched a few points, modern, relating to obstetric and gynæcological practice. I thank you for your attention.

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ENDOMETRITIS.

By J. H. Van Eman, M. D., Kansas City, Mo.

THE well known truth that not only diseases, but their successful treatment as well, are largely influenced by the development, anatomical structure and physiological action of the organs affected by either functional or organic disease, is my apology, if any be needed, for a brief resume of the development, anatomical structure and physiological action of the internal organs of reproduction in the human female.

Starting early in embryotic life, we find the Wolfian ducts as the very first part of the development of the internal genitalia in both sexes. A little later the ducts of Mueller are developed, and still later these tubes or ducts, by coalescence and absorption, form the Fallopian tubes, the uterus and vagina, thus making not contiguous but continuous tissue structure, differing only in their anatomical structure in such a manner as later to be able to carry out in a proper manner their physiological functions. With the peculiar structure of the vagina and the Fallopian tubes, we have at present nothing to do excepting to say in passing that any morbid condition originating in any part of these structures will sooner or later involve the whole genital tract. With the anatomical structure of the uterus, and particularly with the mucous lining of this hollow muscular organ, my subject has more to do.

Both the vagina and the vaginal portion of the uterus are covered with the same variety of pavement epithelium. The moment, however, that the mucous lining of the uterine canal begins we find a change. In that portion of the canal between the external os and the uterine sphincter, *i. e.*, the internal os, the epithelium becomes columnar or cylindrical. The mucous membrane is drawn in folds or "plicæ," known as the "arbor vitæ," and with pits or depressions between the folds. Opening through this mucous surface are the mouths of a vast collection of racemous mucous glands, estimated to be about ten thousand in number.

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Lying between the mucous layer and the muscular tissues beneath is a marked layer of loose connective tissue, but not quite so well defined as it is above the internal os.

In the body of the uterus, the first difference noticed by the naked eye is that the mucous membrane is smoother than that of the cervix, and that it is thinner and softer. This thinness is most marked just above the internal os and at the point of entrance of the Fallopian tubes.

The glands are tubular, and the surface of the mucous membrane is covered with a single layer of ciliated cylindrical epithelium. The mucous membrane here is separated from the muscular tissue by a sharply defined layer of loosely arranged connective tissue. In addition to a very full supply of lymphatics, we find that the uterus is remarkable for its exceedingly rich arterial supply; while at the same time there is, comparatively, at least, a very insufficient number of veins. In addition to this, when we take into consideration the fact that the uterus is the only organ in the body that has, physiologically, an acute periodic hyperemia, we can begin to understand why it is so peculiarly liable to become the starting point of a morbid condition. Going a little further, we find another remarkable difference. The mucous membrane of the uterine body having doubled its thickness during the week preceding the menstrual flow, in order to get in proper condition for the reception and nutrition of the ovum, and impregnation having failed to occur, another change takes place. It softens, breaks down, and the fatty detritis is cast off. In the course of a few days a perfectly new mucous membrane is formed and made ready to do its work, and this process, almost morbid in itself, occurs in a healthy woman for thirty years of her life and at intervals of only twenty-eight days unless interrupted by pregnancy or lactation. Couple this with the enormous changes in their organs during pregnancy, and it is little to be wondered that so many women have pelvic disease or that when diseased, methods of treatment that neither could or should be used in any other part of the body, give us here the best results.

Etiology.— All vaginas contain pathogenic germs. The woman, however, is immune for at least two reasons. First, she is acclimated, as it were, and is thus tolerant of the presence

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of these germs. Second, the secretions found in a vagina that is in a fairly clean and healthy condition form an exceedingly poor culture medium, hence, the germs existing there are feeble and poorly nourished. Let the detritis of an abortion or of an unhealthy menstrual flow make the culture fluid a rich soil for bacterial growth, and especially when new, active and virulent germs gain entrance from without, and the condition promptly changes. Germs increase in number with great rapidity, and swarming in through the lymphatics and traveling up through the uterine canal, we soon have, in spite of the phagocytes and blood serum, first local infection, and possibly later general infection. I therefore lay down as a general law that all true inflammatory affections of the female organs of generation are due to microbic infection.

Endometritis may be classified as simple, septic and specific.

The simple form is hardly entitled to be called inflammatory, but is rather an exaggeration of a physiological process. In the hypertrophic type we have the thickened epithelium and an increase of blood vessels, lymph spaces and cells. In the atrophic form, a vast increase in the connective tissue and a diminution of blood vessels, lymph spaces and cells and with cystic formations. The first of these conditions has been called hypertrophy, the second hyperplasia. In the first form we are apt to have profuse leucorrhœa with menorrhagia. In the second the leucorrhœa is apt to be slight, the menses scanty and very painful. The pain is intermittent in character, and is located directly behind the symphysis pubis. In this class of cases the general treatment is of the greatest importance. The best local treatment — after the parts have been made absolutely clean, both internally and externally, and the uterine canal has been dilated, if not sufficiently patulous already— is to dilate it with either a dilator or an aseptic laminaria tent. After removing any polypids or vegetations that may exist with a sharp curette, pack the canal with a 20 per cent strip of iodoform gauze, after that an aseptic cotton or wool vaginal tampon ; keep patient quiet and repeat treatment every third day. I find vaginal tamponage with lamb's wool saturated with a 10 per cent solution of ichthyol in glycerine, also mopping out the uterine canal with Churchill's tincture of iodine, very useful in

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this class of cases. Following up this treatment for the two or three weeks preceding the menstrual period, and correcting any mal-position that may exist along with rational treatment, will with very few exceptions effect a permanent cure.

In *septic cases*, we have quite a different condition, the infecting germ being always present. After labor it is the streptococcus, under other conditions, the staphylococus. The disease as a rule is acute in the beginning but may be chronic from the start. Predisposing causes are anything that causes epithelial exfoliation, as pregnancy or cold. Infection usually follows abortion or labor and the germ is introduced on dirty hands or instruments and from what I have said above, auto-infection is possible. In acute cases, and in a less degree in chronic cases, the muscular tissue of the uterus is involved. In acute cases, the lymph spaces, lymphatics, and even the blood vessels, swarm with germs. The mucous membrane swells, breaks down and exfoliates. The uterus is swollen and tender, pain is constant, pulse rapid and out of proportion to the rise of temperature but which is also marked. After the acute stage has passed there is bearing down pain or pressure and the presence of pus in the leucorrhœal discharge proves that the case was not simple or catarrhal.

In the *gonorrhœal* or specific form we have the most virulent type and from its tendency to invade the Fallopian tubes, the most destructive to the patient's health. Without a knowledge of previous gonorrhœal infection, it cannot be differentiated from the septic form except by finding the gonococcus of Neisser in the discharge from the vagina. The clinical history of both types is the same as also fortunately is the treatment. Early and frequent irrigation with 1–5000 bichloride of mercury solution is required, and also the packing of both uterus and vagina with iodoform gauze and removing the pack in from twelve to twenty hours. The radical and best treatment in both septic and specific cases after thoroughly irrigating and cleaning up both the external and internal organ, is to place the patient in the lithotomy position and under an anæsthetic, slightly draw the uterus down with the vulcellum forceps, dilate the uterine canal slowly but thoroughly, keeping up the irrigation all the while, then curette thoroughly with a sharp curette, removing the endometrium as thoroughly as pos-

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sible. After the oozing has stopped mop out the canal with tincture of iodine or pure carbolic acid. Pack the uterus with iodoform guaze but be careful to avoid packing too firmly. If there is vaginitis, paint the vaginal walls with nitrate of silver solution 20 to 40 grains to the ounce. Pack the vagina with iodoform guaze, wool or cotton. Remove dressings in forty-eight hours, re-apply Churchill's tincture of iodine to uterine canal and repack vagina with wool saturated in some germicidal solution. During this local treatment, the constitutional disturbance is to be met in the ordinary manner. Complications do not counter-indicate this plan of treatment excepting when there is a collection of pus in the tubes or other peri-uterine tissues.

When all septic matter is removed, you will get histological repair. The endometrium will be completely restored in two months and your patient is cured, not *patched up.*

OBSTRUCTED LABOR — STRICTURE OF VAGINA.

Allen A. Rawson, M. D., Corning, Iowa.

SEPTEMBER, 1887, Mrs. A., age 31 years, came under my counsel and supervision in her second confinement, owing to obstructed labor. Examination found the head of the fœtus presenting in the second position, greatly enlarged, with evidence of hydrocephalus, and further, that the child was not viable and labor had become powerless. The condition of the patient was one of exhaustion, temperature normal, but pulse 140 per minute and apparently threatening failure.

The vagina had become irritable from frequent examination and attempts to apply forceps without effect, combined with antiseptic injections under a questionable theory of prevention to a degree which became useless, and even harmful; cleanliness and abstinence from uncalled for interference being overlooked under the idea of doing something.

The head of the child was opened and followed by a flood of water, and thence an easy completion of labor within a short time;

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the relief from pressure and resistance giving renewed vigor to uterine effort. The lochial discharge was very offensive at first, but was cleansed away by the use of large quantities of very warm water and the odor soon disappeared.

There was no destructive change of vaginal tissue visible nor reported afterwards by others. Convalescence was reported to be uneventful, but after a few weeks a new evil had arisen in a continuous flow of urine, and examination made it evident that the difficult previous labor had been followed by an urethro-vaginal fistula.

Operation was performed and complete restoration of normal function took place. Contraction of parts of the vagina gradually attracted attention by its increasing obstruction to the sexual act. Nothing was done to obviate the abnormal change, although dilatation was advised, as the liability to pregnancy might seriously affect the well being and safety of the mother.

Several years of quiescence passed when counsel was again sought in September, 1894, by reason of pregnancy, at the third month. Two and one-half inches within the vagina, there presented a firm, smooth cartilaginous or cicatricial band, which encircled the vagina and would admit the passage of but one finger by persistent pressure. The tissue between it and the uterus was soft and yielding, but could not be defined with certainty. The situation with attendant risks was fully explained and manual dilatation decided upon so far as that expedient might avail, instrumental interference being reserved for ulterior necessity. During three months a treatment of dilatation with fingers and hand was employed for ten to twenty minutes at first, three times each week, afterwards lessened to twice and once a week, and finally still less as the contracted tissue yielded, until it appeared sufficiently safe to abide the result at full term. Considerable force was applied during each effort; much pain ensued and some blood followed every operation. Between the periods of dilatation a fine sponge was firmly packed within the constriction to aid and to continue the effect produced by the hand. Labor came on perhaps two weeks prematurely, and during that process the stricture was carefully attended to with a view to sufficient dilatation. Excessive obliquity of the uterus at first prevented reaching the os, but its

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relaxation led to protrusion of the membranes which fell into the stricture and acted as an aid. Nothing was done to hurry the labor. The stricture was under constant pressure from above and below, and after some eight or ten hours of positive effort, after twenty-four hours of fruitless delay, labor was completed with safety to the mother and with a living child. Risk of the knife and forcible dilatation by instrumental application was duly considered, and the hand, with its tact and touch, proved sufficient, although at expense of time and painful, wearisome effort on part of physician as well as of patient. Labor was apparently aided by moderate anæsthesia of chloroform, which seemed not only to smooth the way for the patient, but to conduce to relaxation of the parts.

No injury was done to the vagina or parts adjacent, and recovery was complete, although the present condition is unknown.

REPORT ON OPHTHALMOLOGY AND OTOLOGY—The Diagnosis of Locomotor Ataxia from Optic Nerve Atrophy and Absence of Knee Jerk.

By H. B. Young, A. M., M. D., Chairman.

Mr. President and Members State Medical Society:

The progress of ophthalmology, as I understand it, may be reported in a few words. One of these is *conservatism*. To this may be added more careful study of the relationship between eye affections and general systemic diseases. Illustrating the latter, I ask your consideration of the subject I have chosen and placed upon the program.

When Schmeichler published in 1883 the result of his studies through a long series of cases, and declared that the eye symptoms were definite, well marked objectively and usually the initial symptom of tabes dorsalis, it was hoped that through the earlier recognition of the disease in this way more effective treatment might be devised and the percentage of recoveries increased. That this hope has not been realized you all know.

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But inasmuch as Schmeichler's work gave a new impetus to the study of ocular symptoms of this disease, and produced an interest in them which abides with us unto the present day, it may be worth our while to consider briefly his conclusions and note the application of them by others.

After stating that his material was found in the clinic of Professor Arlt, that part of the fourth medical division of the Vienna General Hospital, whose inmates are sufferers from nervous diseases and in the Home for Incurables—or in the early stages during the progress, and in the last stages of the disease respectively, he takes up the changes which are to be found in the optic nerve, the pupil and the extra ocular muscles, and the following conclusions are reached :

"Beginning atrophy is not found in any case of fully developed ataxy. In beginning atrophy with absence of knee-jerk, a history of lancinating pains would eventually be established. Symmetrical concentric limitations of the visual field and diminished color perception (first for green, then red, then blue) are the outward expressions of this atrophy. Forty per cent of all tabetics will show optic nerve atrophy (Erb's former estimate was 12 per cent). It is not a white atrophy, the disc having rather a pearly tint. It progresses rapidly to blindness. The pupil changes are four in number, viz.: *Reflex iridoplegia* (no response to light), *absolute iridoplegia* (responds neither to light nor convergence with accommodation), *myosis*, and *inequality* in point *of size* in the two eyes. In the early stages bi-lateral mydriasis may occasionally be found. The extra ocular muscles are subject to sudden attacks of paresis, which are of brief duration and liable to recur. This phenomenon has not been observed in any other form of spinal disease."

It is to be noted herein that with the one exception of deciding by ophthalmoscopic examination as to the color of the disc, no peculiar technical skill is required to completely cover the ground. This being the case, and the ophthalmoscopic examination after all only a minor part, there ought to be no difficulty in the application of these conclusions uniformly by every investigator.

Whether this uniformity really exists may be seen by a review of the following cases :

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Case 1.— Under the title "Was it Tabetic Atrophy?" this case was reported by me in the November (1885) issue of the *American Journal of Ophthalmology*. I venture to burden you with it again, because further progress of the case may be recited:

Flora S——, aged 8 years, daughter of a farmer in very moderate circumstances, was brought to me December 29, 1883, on account of declining sight which had been complained of by the child for four weeks only, although the family had noticed for perhaps three months that she did not see well. I was at this time just recovering from a week's illness and too weak to examine her properly, so merely noting that she had V=$\frac{20}{L}$L. and $\frac{20}{C}$R. and that she was apparently well nourished though rather pale, asked that she might be brought another day. Twelve days later (January 10, 1884) I saw her again. Vision was now reduced L. to $\frac{20}{C}$ and R. to perception of light and that only at one little spot in the upper and outer part of the field. The ophthalmoscope showed whitened discs and white lines along the margins of the larger blood vessels, but no marks of any inflammatory process whatever. The color sense was practically abolished. There was *no* patellar reflex. But I found a fair tactile sensibility and normal locomotion; and I could get no reliable history of shooting pains in the lower extremities or constriction about the abdomen. I prescribed potassium iodide on general principles and gave an unfavorable prognosis — suggesting in a note to the family physician that he should seek further for systemic disease, and at the same time look up the family history.

Twenty-three days later (February 2d) I saw her on her return from St. Louis, where she had been taken to consult Dr. John Green. Vision was now reduced L. to $\frac{15}{CC}$ and R. *nil*. Dr. Green discovered nothing new in the eyes, but found Hutchinson's teeth (which I had unaccountably overlooked) and thought that they were more significant of a central cause than the absence of the patellar reflex.

Forty days later (March 12) I saw her for the fourth and last time. The left eye could now count fingers with difficulty at three inches — right eye as before. There was complaint of occasional pain in the head and below the knees. With the eyes closed the body swayed a little in an attempt to stand quietly.

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The soles of the feet were susceptible to tickling; she walked well and buttoned her dress with ease and accuracy. The diameter of the pupil was 6 *mm.* with complete iridoplegia, and the right eye was divergent. I have since learned that she was in a short time absolutely blind. The family then moved to the western part of the state and I lost track of them.

Some three years ago this patient (now a young lady) walked into my office to report that with the exception of her blindness she thought she was well. Co-ordination was good, but there was no patellar reflex; physical development good.

I now append a recent letter from the patient's father:

April 4, 1895.

In regard to our daughter's illness I will send you as much information as I can. She was taken sick last August with a stroke of paralysis and lost the use of her right side, although she is able to walk about the house and use her hand a little now. The doctor thinks that about half of the sickness was caused by the same trouble that caused her blindness, and the rest by trouble with menstruation. I have learned since we came back here that a little over a year before we noticed her failing sight she had a fall from a threshing machine and struck her back on the wheel. Her two cousins were with her, but I don't suppose that we can get the particulars further, as the one who told us and reminded Flora of it, remembered just this much. Flora had said nothing about it when a child, because she had been forbidden to go near the machine. If you would like any information I cannot give, you can write to our doctor here; his address is below.

Yours truly, G. S.

Case 2.— Wm. L——, age 60 years; first seen October 1, 1884. Vision had been failing without pain since the previous March. A year and a half ago, while foreman of a finishing room in a plow factory, he was one day on an elevator loaded with plows to be taken for shipment to the floor below. The gearing went wrong, and the elevator and all fell to the bottom of the shaft (about 12 feet). He was thrown off by the sudden stop, was pretty well shaken up generally, but so far as he knew the only specific injury was to his ankles, which he thought were sprained. After a lapse of three months he recovered from his lameness and resumed work.

Status Præsens.— Right eye counts fingers at three feet; left has only a bare perception of light; optic nerve atrophy; normal

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tension; knee jerk absent; inability to stand steadily and staggering gait; co-ordination imperfect. A local medical society being at this time in session he was brought before it, and the propriety of a diagnosis of tabes of traumatic origin concurred in.

Within three months from that date he was totally blind. Last year, after a blindness of nine years, he visited in Chicago, consulted an oculist, got a diagnosis of glaucoma simplex and had an iridectomy done on the right eye, but without benefit.

A recent examination reveals normal tension in the left eye and a little lower in the right or operated eye. There is also inequality in the size of the pupils, independent of the operation coloboma, the left pupil being myotic, the right fairly large (5 *mm.*). No satisfactory view of the fundi could be had, because of lenticular opacities. Although past 70 years of age he is well nourished, stands steadily, walks well and has a faint show of knee jerk.

Case 3.— Ben W——, age 38; railroad brakeman, first seen April, 1888. Had just "laid off" for ten days because of a bilious attack. Vision, right, 20.70; left, 20.50. Eyes staring and complains that the letters are "flitting." Pupils small and intellection slow; knee reflex absent; stands unsteadily and has a jerky walk; color sense fair, but visual fields limited — in right to a small circle surrounding macula, in left to an ellipse which extends relatively more to the temporal side; discs are pale; body poorly nourished.

He was kept under observation for several months, during which time the blindness steadily progressed and co-ordination became more and more difficult. A diagnosis of tabetic disease was decided upon, and this was subsequently concurred in by Brown, of Chicago.

At the end of a year he was practically blind, locomotion was very difficult and emaciation extreme. Three months later, after several weeks of complete mental obscuration, the end was reached.

Case 4.— Chas. J——, age 33, a machinist; first seen in April, 1890, on account of asthenopic symptoms. Vision, right, 20.20; left, 20.40, after correction of H. 0.75 D. (Homatropin test). No other abnormality noticed. July 1st of that year, without having again seen the patient, I left for a three months'

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vacation in Europe. Immediately on my return the patient came to me to say that he had had so much eye trouble while I was away that he was obliged to consult another oculist. Imagine my surprise when I found well advanced optic nerve atrophy in the left eye, vision being reduced to counting fingers at a short distance in a limited field. Vision in right eye still normal. Knee jerk abolished. Co-ordination so nearly normal that there was doubt as to impairment. Complaint of head pains, but nothing definite as to lancinating pains in body or extremities. Ill defined but probable history of syphilis; but as he was a "foundling" the inherited might be confounded with the acquired in the later manifestations then under consideration.

Three months later the right eye began to fail (the left having then only a bare perception of light) and within another three months, in spite of potassium iodide, galvanism, bichloride of gold injection (Thurley's treatment), and other therapeutic measures, blindness was practically complete.

During this time he visited a well known alienist in Chicago, and got a diagnosis of tabes dorsalis, possibly of specific origin. He subsequently went to St. Louis, where a similar diagnosis was given by another well known alienist.

Within the past week, while he was making an Easter visit in town his condition was reviewed. Body well nourished, quantitative light perception in both eyes, better with the right; knee jerk *nil*, stands well, walks well — in fact, he tramps for a living, selling books and notions.

If one attempts to analyze these cases it becomes at once apparent that there is but little in common to them all — only the optic nerve atrophy and the absence of knee jerk. Upon these two features in all probability has the diagnosis of locomotor ataxia in these cases been decided; and yet there is but one real locomotor ataxia in the four (case No. 3).

Putting aside the possibility of inaccuracy in deciding whether the color of the atrophic disc was white or pearly, for which there is some excuse, because expert ophthalmoscopists may honestly differ on the question of definite color, we may yet have room to suspect that the application of Schmeichler's conclusion has not been uniform. It would seem, rather, that only a part of his

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work has been considered — the progressive blindness — and this associated with Westphal's sign, the most common initial sign (75 per cent) of locomotor ataxia, has been taken as conclusive in the matter. If we are allowed to draw any conclusion from this brief experience it should be to this effect: That the diagnosis of locomotor ataxia from optic nerve atrophy and absence of knee jerk, without other manifestations, is unreliable. Something more is required, and while we are looking for that "something more" let us follow Schmeichler's teachings more closely.

DISCUSSION.

DR. F. S. THOMAS: Diseases of the eye I know so little about I do not wish to discuss that phase of the report, but just to say something with reference to locomotor ataxia.

Two years ago I read a paper at the Burlington meeting, and at that time took the ground that locomotor ataxia began undoubtedly in the peripheral nerves, instead of the posterior spinal cord, where we afterward found it.

I was led to believe this from reading some very advanced writers upon that subject. A very short time after writing that paper I obtained Dr. Ludwig Hirt's new work, and found that he takes that position. Persons who make a specialty of nervous diseases often magnify these diseases, such as atrophy of the optic nerve, and are too ready to pass judgment without the presence of other signs which accompany it. A physician should be very careful about believing that a very large per cent of the cases having optic atrophy, are cases of locomotor ataxia. I like Dr. Young's paper very much and think it is very instructive in character.

DR. HAZEN: This is interesting in connection with the use of the ophthalmoscope in these spinal diseases. These are not very common and they do not often fall into the hands of the ophthalmologist until they begin to go quite blind. I call to mind several cases of a negative order — the question was whether there was a connection of the eye troubles with the spinal disease. I remember a case that I saw twenty years ago. The subject was a man of means who was able to consult the best men in the country; he consulted Dr. Jules, of Chicago, who said he would die in six

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months, Dr. Howard, of New York, and others, and all of these men pronounced him as having locomotor ataxia, and treated him for awhile, and I examined his eye for eye trouble in that connection, the color sense, the condition of the pupil and the optic nerve. Now, that man had nothing of the kind. His pupil was good, his sight was good, and now after twenty years his sight is good. He has difficulty in walking, but he has given up the idea that he has locomotor ataxia. He can attend to business (he is a farmer), and has a bright mind and eye. It was only in examining the eye that a differential diagnosis could be made. I recall several cases of the same kind. It is a beautiful instance of the connection of the ophthalmoscope with these spinal diseases.

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DIRECT TRITURATION IN RIPENING IMMATURE CATARACTS.

By W. C. Pipino, M. D., Des Moines.

IN VIEW of the fact that some of our high authorities have expressed themselves unfavorably in regard to ripening immature cataracts, regarding the process as dangerous and not to be performed, I feel that any additional experience in this field, though it emanates from a source not so distinguished, is worthy of attention and consideration. The method most frequently mentioned in the text books for ripening cataracts is Foerster's. The chief objection to it is the mutilation of the iris by an iridectomy, and possible injury to the cornea from attrition. By direct trituration, the method devised and introduced by Boerne Bettman, these objections are overcome, and when performed by skilful hands the method is the acme of perfection. The careful reading of Dr. Bettman's paper on "Ripening of Immature Cataracts by Direct Trituration" impressed me favorably, and I determined to give it a trial when an opportunity presented.

I have performed the operation seven times, and in no instance have I had occasion to regret it. I am confident that each individual whose lens I have thus ripened would still be groping around in semi-darkness, had I refrained from interfering with the slow process of nature, and instead, given the advice I have in the past, to "wait until the cataracts are ripe before an operation can be done."

Noyes tells us "the process of sclerosis goes on for ten or more years." This is true, and it is in this class of cases that the operation is designed to hasten maturition and restore to the individual useful vision by an early operation.

One of the chief objections urged against direct trituration is rupture of the suspensory ligament and dislocation of the lens. Dr. Bettman in his paper published in the *Journal of the American Medical Association*, November 4, 1893, in reply to this criticism says: "I can only reiterate that careful and skilful manipulation of the spatula in my hands has never been followed by any untoward

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symptoms; seemingly the most probable misadventure would be tearing of the suspensory ligament and dislocation of the lens."

The first time I performed the operation I succeeded in doing the worst thing that could possibly happen — I ruptured the suspensory ligament. However, this did not prevent a good recovery with useful vision from a subsequent operation. This accident, occasioned by my awkardness, did not deter me from resorting to the method in other cases. I discovered by this experience that the amount of pressure to be used in triturating a lens is to be acquired by experience only. I exerted too much pressure on the lens, which I avoided in my other cases. I now employ just sufficient pressure to break down the lens structure. It is surprising what little pressure will cause an immature lens to become wholly opaque. In twenty-four hours you can see the change, and in the majority of cases it is opaque at the end of the first week. The cases in which I triturated the lenses, the individual could see barely enough to get around and avoid coming in contact with objects, and not sufficient vision to follow any employment, read, or sew. One case of an old gentleman, in particular, who had been groping his way for several years, was told by several professional gentlemen whom he had consulted before coming to me, that he must wait, as nothing could be done until his cataracts were ripe. In each eye there was a small opaque nucleus around which the fundus could plainly be seen.

The operation of ripening the lens artifically being fully explained to him, he readily submitted, and in four weeks from the date of trituration simple extraction was performed, followed by good vision. My experience is limited to five cases and seven eyes. Some of the patients being so well satisfied with one eye, they refused to submit to an operation on the other. In no instance did iritis occur. This was guarded against by the instillation of atropine. In one case I extracted the lens too soon after trituration, and I was compelled to wash out the anterior chamber to free it of cortical matter before I could get a clear pupil.

I wait now from four to five weeks before attempting extraction. In the light of my present experience I do not hesitate to urge the operation in suitable cases, as I believe it to be free from danger and enables us to restore patients to a life of usefulness and

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pleasure when they would otherwise be compelled to wait many weary months under the old plan.

Since the above was written another paper by Dr. Bettman is published in the last number of the *Annals of Ophthalmology and Otology*, wherein he reviews his past experience and reiterates in a concise manner the history of its innovation together with the report of additional experience. He deduces the following conclusions from twenty-four consecutive reported cases.

(1) Artificial ripening of cataracts is, in properly selected cases, demanded; (2) direct trituration is preferable to other methods, it is easily performed by one possessing ordinary skill; (3) it is not followed by any untoward symptoms, consequently it is a safe and reliable procedure; (4) it is not indicated where sclerosis involves the bulk of the lens; (5) it is especially useful in senile cataracts with soft cortex; (6) the results of the massage are marked and rapid; (7) maturity of the lens is usually induced in three weeks, often sooner; (8) very little discomfort is caused the patient aside from bandaging the eye two days; (9) at the subsequent extraction of the lens, the cortical substance is readily removed and dangers of iritis and suppuration of the corneal wounds are lessened.

DISCUSSION.

DR. SAMPSON: It was my great fortune to see some of the work of the essayist in this experiment, as I was with him at the time he was doing the work on the rabbits, and they were without exception satisfactory. I did not, however, attempt to do the operation until within the last few months, my cases being limited to the small number of three. In two of these cases I found it, without exception, all that could be claimed for it. In one of the cases I had something to regret, but it was not the fault of the operation, and was to a certain extent my own, in that I had not made proper preparations. Had that been done in this case I am satisfied the results would have been better. As it was, a secondary operation was necessitated as the result of inflammation. On the whole, I think I can recommend the operation as being altogether safe, and offering and giving all of the advantages he claims for it in his paper.

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THE MANAGEMENT OF EAR COMPLICATIONS IN INFECTIOUS DISEASES.

By F. E. Sampson, M. D., Creston, Iowa.

IN PRESENTING this paper I do not presume to instruct this august assembly, but rather to call attention to a few already known facts bearing upon the prophylaxis of deafness.

When we consider that one in every 1,000 persons in the civilized world is a deaf-mute; that there are approximately 1,500,000 deaf-mutes in the world of which more than one-half are cases of acquired deaf-mutism, I think we can appreciate the necessity of giving some attention to this subject.

A rapid survey of the etiology of deafness may further arouse our interest.

The causes of acquired deaf-mutism as given by Tonybee who made the figures given below from cases under his own observation, were as follows:

From measles	4 per cent.
From fevers, including typhoid and brain fever	23 per cent.
From scarlet fever	36 per cent.
From other causes not classified	37 per cent.

These figures are probably far too small a number of cases to be altogether reliable. The percentage from scarlet fever is probably higher than would be shown from a larger number of cases taken from various communities and different countries. Taking the compilations of various observers and making an average from their figures, we find scarlet fever responsible for 25 per cent of the cases of acquired deaf-mutism.

Meningitis	20 per cent.
Measles	7 per cent.

Diphtheria claims a percentage which differs widely with different observers, and mumps claims a small share.

It must also be remembered that loss of hearing in one ear or impaired hearing in both which falls short of total deafness, is likely to escape enumeration in casting up the results.

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The prevention of deafness would imply the prevention or modification of the causes productive of deafness; and in considering its importance, it would only be fair to take into consideration all other pathological conditions resulting from the same causes and so influenced by their modification.

Thus we know that the ear complications of the above-named diseases may include inflammation of the mastoid, meningitis, sinus thrombosis and cerebral abcess.

The extent to which the infectious diseases are responsible for these grave maladies is difficult to determine because they are often remote results — coming on years after as a result of the chronic otorrhœa following the infectious diseases. But we do know that they occur not infrequently both as immediate and remote consequences.

As to the prophylaxis, of course the most effectual prophylaxis of the complications would be the prevention of the infectious disease; but I will not here take occasion to discuss quarantine and immunization.

Since the pharyngeal tonsil or so-called adenoids in the naso-pharynx have been made a study, it has been demonstrated that patients with hypertrophy of this organ are much more liable to ear complications in the course of infectious diseases. That such children are more easily infected by reason of this lymphatic tissue furnishing an active absorbing surface with little power of resistance, and for the same reason more liable to severe general infections from local inflammations in the naso-pharynx. Hence the early removal of hypertrophied tonsils — faucel and pharyngeal — at a time when they are free from inflammation would in all probability reduce the percentage of ear complications in infectious diseases. In view of the fact that the otitis in these cases is generally due to infection or extension of inflammation from the naso-pharynx through the Eustachian tubes, to make and to keep the naso-pharynx clean would be clearly indicated. We could hardly expect to make the naso-pharynx aseptic, but the collection of large quantities of putrescent material can be prevented. If anyone questions the advisability or necessity of such, let him make a rhinoscopic examination of the patient suffering from diphtheria, scarlet fever or typhoid — especially those cases

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with tumefaction of the nasal mucous membrane and consequent mouth-breathing.

The ideal method of cleansing these parts would be to bring in contact with them some substance that would be both a cleansing agent and a germicide. Many different substances have been proposed. Each has distinguished advocates. I will not enter upon a discussion of the relative merits of hydrogen peroxide, mercuric chloride, normal salt solution, etc., but will outline a method which I believe to be effective and free from danger. One that has had a good trial and given good results in many of the hospitals and doubtless in the practice of many of the physicians present.

It is the thorough irrigation of the nose, naso-pharynx and pharynx with a warm solution of sodium borate and boric acid (in diphtheria and scarlet fever followed by a spray of hydrogen peroxide), practiced from the earliest manifestations of the disease to its termination. The frequency of the application is to be determined by the local conditions and the general condition of the patient. In diphtheria and scarlet fever the flushing should be employed every two to four hours. The best instrument is the ordinary fountain syringe, using the rectal tip.

The method of procedure depends on the condition and disposition of the patient,— it should always be that which would be least productive of exhaustion. If the patient is a child and refractory, it should be wrapped in a sheet with the arms and legs well confined to prevent struggling, and kept recumbent on the side so that the nostril which is least pervious will be uppermost; with the head raised a trifle and placed on a piece of rubber or oil-cloth rolled so as to carry the return fluid into a receptacle on the floor at the side of the bed or table.

The syringe nozzle is placed in the uppermost nostril and a gentle current allowed to flow. A strong current has been recommended, but I have doubts as to the propriety of such; for, while it may be more rapidly effective in removing membrane in diphtheria, it might produce traumatism of the mucous membrane by forcibly separating the exudate; it might by the great pressure even defeat one of its main objects by driving shreds of membrane or septic material into the middle ear.

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To me it seems better to pass a large quantity of fluid—say two quarts at low pressure, the fount being twelve to eighteen inches above the patient's head. The pharynx should then be thoroughly douched, care being taken not to strangle the patient, and here a more forcible stream can be used with safety.

If the patient be tractable and the disease not too serious, the cleansing may be done with the patient sitting erect and holding or having held below the chin a receptacle for the return fluids.

If in diphtheria or scarlatino-diphtheria the nostrils be entirely occluded when the use of the flushing is begun, the instillation of a few drops of one per cent solution cocaine may be of advantage, and if necessary this followed by carefully working a cotton wrapped probe through to the naso-pharynx, care being taken to keep near the floor of the inferior meatus.

Should further local treatment be considered necessary as in diphtheria, the parts are well prepared for its reception.

Now for the treatment of middle-ear complications.

The inflammation in these cases is, as a rule, rapidly destructive, so that in a comparatively short time we may have nearly or quite total destruction of the membrana tympani, discharge of one or more of the ossicles or invasion of the internal ear and mastoid.

We are taught by authorities on the ear that puncture of the tympanic membrane in its posterior inferior quadrant should be done early. This advice is good and is based on sound surgical principles.

It must be admitted, however, that the operation is not always easy, in fact in many cases where the procedure might be clearly indicated it would be impracticable.

This will be appreciated by anyone who has made the effort where the patient was a refractory child with small curved meatus—poor illumination of the parts—yet the best obtainable at the time, and inefficient assistance.

There are cases, however, where it *is* practicable and a class of cases where it is imperative. I here refer to those cases where before or after perforation the mastoid is threatened; in these, as a rule, the pain is not relieved by the appearance of discharge and the upper and posterior wall of the meatus bulges forward and downward, partly or completely closing the canal. This

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condition, resulting from the inflammation of the upper part of the drum cavity or attic which by swelling, is shut off from the rest of the cavity. The inflammatory process extends outward along the bony wall of the canal, sometimes the exudate lifting the periosteum of the bone, and it may, in fact probably will, extend to the mastoid antrum, if not promptly relieved.

Here perforation of the membrane is indicated; and in place of the ordinary operation above mentioned, I can heartily indorse the operation proposed by Dr. Tansley, of Manhattan Eye and Ear Infirmary. It has been described in some of our journals under the name of Tansley's Cut, and is performed as follows: With the patient firmly held and all parts well illuminated, a Grafe's cataract knife is introduced through the speculum, the tympanic membrane punctured in its posterior superior quadrant, the knife is pushed on until the point touches the bone. The handle is then depressed and the knife made to cut outward about three-fourths of an inch or the whole length of the bony canal, the point being kept against the bone the whole length of the incision.

I can heartily recommend the procedure as a preventative of mastoid disease in any case where it is threatened from acute inflammation of the middle ear.

If operative procedures are not deemed advisable the ordinary treatment of acute otitis may be employed, such as the instillation of solution menthol in olive oil, or five per cent each cocaine and carbolic acid in glycerine, two or three drops needed to allay the pain. Hot applications of solution boric acid applied one-half hour every two or three hours is a measure which may be productive of good in allaying pain and encouraging perforation of membrana tympani. The meatus should be filled with the solution as hot as can be borne and the heat maintained by cloths dipped in hot solution and frequently changed, or by hot salt bags kept in contact with the ear.

After perforation of the drum head has occurred the ear should be frequently syringed with warm boric acid solution to which has been added a little borax or bicarbonate of soda.

The very popular method of treatment by insufflation of dry powders should *not* be employed at this time as it may interfere with free drainage. It may be useful later in the disease after the

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more acute symptoms have subsided. The daily use of Politzer's air bag is highly efficacious.

By this time if we have otorrhœa it would be considered a sequel rather than a complication.

In closing I will say that I believe the treatment of our infectious disease should be as simple as possible and yet be efficient.

I have heard it said that the thorough treatment of ear complications in such cases was too complicated to be practicable; too exhausting to the patient—and even that those suffering from severe complications, such as would probably result in deafness, were likely to die anyway.

So much the greater necessity for taking every precaution against their occurrence, and the procedures here advocated as prophylactic I believe to be highly efficient in the treatment of diphtheria and scarlet fever even with the ear question, mastoid and cerebral troubles not considered.

Clearing the surface of highly vascular and absorbent membranes of putrifying materials, of tox-albumins and clearing the ground for the unobstructed action of germicides, is certainly to be desired. In the first named disease the upper air passages are the battle grounds.

When the ear complications so occur thorough cleansing of the parts is certainly not a very onerous task, nor need it be exhausting to the patient. When mastoid trouble threatens it is no longer a matter of convenience that is to be considered, then prompt and thorough action must be taken, and if serious trouble does not develop for want of, or in spite of efforts made to prevent it, the physician who temporizes in *these* cases should be banqueted by the undertaker.

I believe that careful observance of the methods here advocated will reduce the number of ear complications, modify the severity of those that do occur, reduce the percentage of chronic otorrhœas and the number of deaf mutes, save many mastoids from the chisel or the trephine — on the whole prevent suffering and save life.

Until recent years the treatment of this class of diseases was, and is yet to some extent, symptomatic, but as etiology becomes more thoroughly understood, our treatment grows more rational.

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Perhaps the time may come when the complications of infections and infectious diseases will be no more, save on the age-be-yellowed pages of antiquated books, when Dr. Eutopia will go forth with his pockets full of antis for the various toxins and with his hypodermic ordnance meet the enemy at the threshold of human economy and annihilate him.

But we must be doing something while we wait.

REPORT ON STATE MEDICINE.

By J. S. Braunworth, M. D., Muscatine, Iowa.

A GENERAL resume of the work done in this department, during the present year, might not, at first show any striking results; but when we take into consideration the unusually good health of the state, we can see at a glance this is only made possible by the strict attention and prompt work of the sentinels on guard all over the state.

At more than twenty different points did small-pox enter the state, and hundreds of cases furnished points for disseminating this loathsome disease. In very few cases did it spread beyond the families who first came in contact with the first case. Compulsory vaccination, prompt isolation and intelligent co-operation of our intelligent population have succeeded in not only holding in check, but in stamping out this disease promptly, in spite of the daily danger of new cases imported from Chicago, Milwaukee and St. Louis.

When we contrast this method of handling this disease with pen pictures of it, in some other parts of the world, where the clerk at the counter, miller at the flour bin, and beggar in the streets, covered with pustules, and the blind and scarred results of non-interference with the disease, we realize the benefit of strict sanitary boards of health.

Influenza, or la grippe, has returned; but not in the same form that other states and countries have had it.

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While by no means a mild, harmless disease, it has been comparatively easy to cope with. The mortality confined chiefly to aged people, whose vitality was at a low ebb, differing from its appearance in England and Germany, where deaths per thousand cases were twenty-one at the previous visit to thirty-eight per thousand last year.

Unfortunately neither quarantine nor sanitary precautions availed. As the English journals naively remark "It has shown a decided preference for the well-to-do classes."

Diphtheria has appeared in many portions of our state.

Antitoxin experiments are being carried on daily. Although at this stage somewhat unsatisfactory it certainly is a step in the right direction, and while thousands of injections have been given, not one has, so far, proved harmful.

We have had no diphtheria in our vicinity; but our neighboring city, Davenport, has had quite a siege.

The antitoxin has been tried quite extensively and with quite favorable results.

Dr. Cantwell, president of board of health, publishes a report by Drs. Braunlich and Matthey on the first three cases treated with antitoxin.

One of the cases was apparently hopeless from the first. Each stage of the disease responded favorably until final recovery.

Membranous croup also responded favorably. Of the experiments at Iowa City you have heard through Professor Bierring.

Scarlet fever has been epidemic in many localities; but strict isolation and private funerals have been insisted upon, and has held this disease in check as never before.

Typhoid fever has been quite prevalent during the past year, owing to the low stage of water in our wells and cisterns, due to the unusual drouth.

I think in Iowa we have an unusually intelligent public to deal with, and as their attention was called to this danger, and the remedy pointed out, the boiling of drinking water was generally resorted to.

The infectious nature of the disease was duly respected and this care naturally resulted in a diminished death rate.

One great problem before our people, on our eastern or Mis-

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sissippi border, is, the threatened pollution of our water supply by the "drainage canal." It has been called "the sanitary crime of the nineteenth century."

When this canal was first projected, it was claimed, it would be a great water highway from the lakes to the river. The situation has gradually dawned upon the people, and the adoption of a system of fixed bridges all along the line, stamps it, as not intended for commerce, but, simply a drainage or sewage ditch.

Representative Bartholdi, of Missouri, introduced a bill into the house, calling for a committee, to investigate the pollution of waters where more than two states were infected or involved. While the bill was shelved, it is not dropped, and will appear again.

Speaker Crisp has presented to the house, a memorial by Major Charles Smart, of the surgeon general's office, a resolution from the American Health Association, in favor of the bill.

Public attention must be drawn to this bill.

President Cleveland in his last message, states: "I am convinced we ought no longer be without a national board of health, charged with such duties as pertain to the protection of our country from pestilence and disease. Prompt advice could be given to local boards of health; or, in cases where there are no local boards, prompt direct attention for suppression and abatement of diseases could be given."

The creation of such a national board or bureau of health, would improve our opportunities at home and abroad, and be in the interest of the safety and health of our people.

A speedy compliance with this demand is to be hoped for. As a new danger arises, new remedies are experimented with.

There is danger looming up before us, of having our beautiful Mississippi become a second edition of the Chicago river, malodorous and vile in the extreme, endangering the water supply of St. Louis and all other river towns.

We are interested in experiments with electricity, as it approximates sunlight in its effects on bacteria and as a disinfectant.

A few years ago experiments were made in the sewers of Paris, with the arc light, resulting in considerable purifying effect. Electricity has been found a very useful disinfectant in hospital wards also.

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Dr. Margaret A. Cleaves reports how she dispersed the odors from a garbage barrel near her office door by switching on an arc light, for half an hour, and going away. When she returned, the atmosphere, which had been unbearable, was perfectly pure, although elsewhere in the building, the odor still persisted.

In Tesla's wonderful experiments with high tension currents, a remarkable quantity of ozone is given off, and this quality is observed around all arc light stations.

Experiments in this line and with this agent will mark the progress of the future.

Hand in hand with the intelligent education of the masses on hygienic lines, our local and state boards of health are doing grand, though quiet work.

As progress is made in knowledge of avoidable diseases, so higher social purity and stricter and nobler standards of conduct are growing in the general consciousness.

DISCUSSION.

DR. JENKINS: There is one point that has been offered that there is some little question about in these modern days of germ theories and specific causes of disease. I cannot persuade myself, not only from reading the books and the teachings of the bacteriologists, but from personal experience, that low water has anything more to do with typhoid fever than simply the fact that the water at that stage contains a little more animal matter, and in that way furnishes a better soil for the culture of the typical bacillus. I believe that typhoid fever always comes from specific poison. I think where you find typhoid fever you will always find that there has been contaminated milk supplied from a contaminated well, or something of that kind, and that the low water has nothing more to do with it than simply to make the water not so pure, and in that way more likely to contain those things that are necessary for typhoid fever. That is my opinion with regard to typhoid fever.

DR. CAMPBELL: There is one point in this discussion concerning low water that I think has been overlooked. In speaking of low water we probably mean the same thing, although do not say it. In the stream that runs continuously the matter of course is

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carried off, to a great extent at least, but in low water it goes dry and leaves pools that are stagnant, and in that way every once in a while we have typhoid fever from that stream. I do not think that the wells being low has nearly so much to do with producing fever as these stagnant pools, for in that way these germs have an opportunity to multiply and, of course, contaminate anything, the milk supply and all. Of course, where they happen to be near the cities it is more particularly true.

DR. RAWSON: I want to offer a few remarks with reference to low water in connection with typhoid fever. In our county — Adams — the town is supplied with water works, and for the last two years we have been nearly starved for water, therefore the reference made by the paper to typhoid fever in connection with low water deserves some notice, because I know that in our county we have not had a proper case of typhoid fever since the low water. Our farmers are almost starved for water, and no typhoid fever. I do not know that our county is having any greater freedom from infection than any other county, but there has hardly been anything to call a doctor's attention there, therefore I doubt very much whether low water is productive of typhoid fever.

DR. REING: I heartily commend this paper; it shows that the doctor has been wide awake and fully up to the times. I also think there are not many places that have had the happy experience that Dr. Rawson refers to. I think there is no county but in which there is a great deal of connection between low water and typhoid fever. The history of typhoid fever, as far as I have had any means of knowing, bears that out, and the suggestion made that at such times the water be boiled would be, I think, of great advantage and a practical one.

DR. BIERRING: I am glad that some reference has been made and attention called to these matters, especially the disposition to be made of sewage matters. They should not be permitted to drift down the rivers and into the Mississippi river, exposing the towns which are located along that river. Regarding the question of boiling water, I take a special interest in that because of the extended investigations I have made. I noticed this particularly in the sewers of Paris, in which one-fifth of the sewer

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contents are taken to the neighboring villages and disposed of in the form of fertilizers, and the fluid contents sink into the ground and are collected by means of drainage, and, passing through this natural filter of the soil, it again comes into the sun perfectly purified as far as any dangerous substances are concerned. In regard to the connection between low water and typhoid fever I think exposing the effluvia and the contents of the river bottom to the surface gives rise to gaseous odors, naturally adds to the development of typhoid fever.

DR. FIELD: I have been especially interested in the reading of this paper, because it is a very nice paper, and upon a very interesting subject. One point in the paper struck me particularly, and that was the use of the electric light as a disinfectant. That is new to me; I never thought of its application in that way. When I think of the great flood of light that is constantly pouring down through the flowing waters, making them purer and purer as they flow along, I can very readily think there must be something in it. Not that we can supply with this artificial light what is being done by the light of the sun, but it does seem to me that it might be quite an advantage in a local way. Of course we cannot do anything large compared with the great luminary nature has placed to do these things for us, and generally I do not think that is the thing to do with sewers. I do not believe generally that sewage should ever get into running streams; there is something better to do with it. Nature in every living thing conducts a great laboratory which brings it out changed in form and nature to make it more productive of good in the support of life, vegetable and animal. Our custom is to throw it into the waters, and let it be carried away. That is the cheapest and most convenient way; that is the only thing that can be said of it, and that it becomes finally of great value to the earth. It is in this way made useful as the course of the rivers change. If we follow the course of a stream we will see that it is gradually changing from one side to the other — often indeed changing its entire course, and leaving in its former channel great tracts of fertile ground, the residue of matter that has come to the stream. I believe that this paper will be an inspiration to everybody whose thoughts are drifting in that line.

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STRYCHNIA.

By W. H. Christie, M. D., Omaha, Nebraska.
(Professor Materia Medica and Therapeutics, Omaha Medical College.)

IT WOULD not be out of place for me, a non-resident of the state, to ask your forbearance in appearing before you and encroaching upon your valuable time,—for I recognize the fact that Iowa, in medicine as in all other great matters, is in the front and up to date; and to utilize any of the time of this society, is to supplant some one more able to occupy this hour than myself.

By the courteous invitation of your honorable chairman of the section of materia medica, I am here and you suffer this infliction through him. I thank you for this honor and from him you may seek satisfaction

In these days, when the chemist is throwing new products from the laboratory in the lap of the profession by the score, so that to keep track of them we are compelled to have a revised edition of new remedies every few months, would it be considered fogyish to recall some of the virtues of the old, the tried and true.

Trusting that it would not be without profit, I have selected the *Therapy of Strychnia.*

As the judicious builder would first have a good foundation before he erects the super-structure thereon, shall I not point out the leading physiological effects upon the system?

It is not my desire to recall the toxicology, but the effects of medicinal doses.

When administered per orum it stimulates the activity of the functions of the tissue it comes in contact with. The functional activity of the stomach is quickly increased and it is readily diffused into the blood.

One of its first effects is upon the *reflex nervous system*, including the vaso-motor, respiratory and cardiac centers, as well as the reflex excitability of the spinal cord.

By the vaso-motor excitement we may have tonicity of the walls of the blood vessels. Increased inspiration loads up the cor-

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puscles with more oxygen, there is increased stimulus to the heart, hence increased *vis a tergo*. From these we have increased pressure in the walls of the arteries and arterioles, enriched blood and increased pressure, forcing the elements of nutrition into the lymph-spaces, where the cells suspended as so many stationary amœba, are ready to take on the atom of dynamical force, and discharge the products of wasted energy.

Here actual respiration and nutrition take place. Carbon dioxide is exchanged for oxygen. The removal of the former and other *debris* is as much dependent upon blood pressure as the supply of the later and other nutrients. Every nook becomes a busy mart of exchange. Glands increase their secretion whether excretory or secretory. Sensation is enhanced. Vision and hearing are accentuated, the mental powers are greater, the senses all sharpened. A tonic has been given.

Physiologically — times are good. Leave well enough alone is a good aphorism. To carry this process too far, is to get a toxicological effect; to cut off elimination by the kidneys and respiration and bring about carbon dioxide poisoning. Hence we should never carry the effect beyond a remedial physiological one to the field of toxicology. Some pathological conditions may necessitate larger doses than in other cases, which we will note — and again, the system will accomodate itself to its use.

Rational therapy of strychnia consists in correct interpretation of the pathological conditions in disease, regardless of the name, and the use of the drug agreeable to its physiological action as in the main cited.

Success following its empirical use, will always be found to demonstrate these fundamental laws of its action, and when used in opposition to them, nothing but evil consequences will follow which may be disastrous even to death.

From these rules strychnia should only be used where the reflexes, respiratory and cardiac centers are depressed, and the conducting powers of the cord are obtuse and cerebral activity relatively low, and should never be used where the converse of these, any or all of them are, relatively considering the normal function of them, accentuated or abnormally active.

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In all conditions of the gastro-intestinal canal, whether primary or the sequelæ of some other primary disease, it should never be used when there is a sthenic type, acute congestion, or increased irritability from such conditions as acute gastro-intestinal catarrh, increased peristalsis of the intestines, or increased muscular activity of the muscles of the stomach, or where there is increased functional activity of solar, mesenteric plexus and vaso-motor excitement or activity of centers of pneumo-gastria. But contra-wise, when there is depression of these, as shown by symptoms of partial congestion, deficient secretions of the different groups of glands along this great tube, indolent muscular activity, the depressed condition of the center of the pneumo-gastria, when not only external but internal respiration is low, as may be indicated by the shallow sighing respiration, the retention of the carbon dioxide which is the prime cause of colliquative perspiration, which so frequently is present in the history of indigestion, cholera infantum, cholera, cholera morbus, diarrhœa, dysentery and typhus and typhoid fevers and like depressed conditions.

In indigestion small doses of the tincture of nux vomica, from one to five minims, fifteen or twenty minutes before meals, or a small dose of from 1-200 to 1-150 of the alkaloid gives good results, or in irritative dyspepsia, which irritation you note differs from irritation from vaso-motor tension, being the reverse, a passive hyperæmia, or passive congestion.

By increasing blood pressure the venous engorgment is removed, the veins being emptied and the arteries correspondingly filled.

There is removal of the old and effete which makes room for the new. Obtunded cell activity is removed, and the functions restored *pro re nata*.

In diseases of the respiratory tract its use will be governed by the same simple rules. From their observance the results are pronounced and widespread for good.

In bronchitis in the aged and in the later stages of the depressed and weak, empirically, for a long time, before its physiological influence was pointed out, strychnia has occupied a prominent place.

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In pneumonia when the activity of acute stage has subsided in the sthenic type, or in the asthenic, from the commencement, the respiratory system may show depression, the heart likewise may give evidence of being overtaxed, external respiration will be shallow, increased in frequency, actual respiration will be correspondingly imperfect, which aggravates most seriously the functional activity of all nerve influence, increases vaso-motor depression, favors the filling of veins and increases the emptying of the arterial side of the circulatory system until asyphyxia may have gone on, to such a degree, that the carbon dioxide has stimulated the sudorific glands to colliquative perspiration, which still further enfeebles the general condition of the subject, and finally coma and even convulsions may result.

Strychnia then from the earliest manifestation of depression of these centers should be administered. As compared to digitalis as a tonic to the center of respiration, it is far the most reliable when the temperature is above 103 degrees Fahrenheit. The reason being, as Cash and Brunton have shown, that a high temperature has the effect of depressing the inhibitory influence of the vagus, virtually causing a paresis of it.

Large doses of digitalis alone can overcome this paretic condition, but digitalis in large quantities, produces paralysis of the nerves arising from the fourth ventrice. It is for this reason that digitalis gives negative results as a tonic to the nerves from this area, and why strychnia has been found of such great value in pneumonia against heart and respiratory failures. To enhance the effect of strychnia under the conditions alluded to, atropia, in tonic or small doses, might be mentioned as of great importance.

Resolution in pneumonia under the conditions alluded to, by reducing the passive hyperæmia, too, is hastened and poliferation of the cells of mucous membranes of the air passages is increased as witnessed in the freer expectoration. Hence an expectorant.

The importance of strychnia in the treatment of tuberculosis is worthy of notice, as I believe the first important fact in all conditions necessary to develop tuberculosis, there is either an hereditary influence of the nervous system which predisposes the subject, that yields to this disease when subjected to the same environments, while others likewise surrounded escape the disease;

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or again, either disease or abuse that has undermined, depresssed, or made the nervous system in a similar non-resisting condition may permit the development of tuberculosis.

Strychnia will do much toward improving digestion, preventing venous congestion and favoring the removal of the exudate, which forms the best culture medium for the rapid increase of the colonies of bacterial life.

Besides its effect upon the nervous centers that stimulate the glands of secretion of the vaso-motor, respiratory, and thus preserving the equilibrium of the circulatory system, in doing this and making cell nutrition the best possible, has not nature been able to better preserve and, perchance, increase neucleine, which is nature's antitoxin?

This suggestion brings us face to face with the therapeutical use of strychnia in many infectious diseases, as typhus, typhoid, diphtheria, etc.

It will scarcely be necessary to allude further to the use of strychnia in these diseases, or its effects upon the great centers that play such an important role in health and disease.

The mechanism is similar, differing only as the different toxins developed in the disease may affect the different important tissues especially. As for instance in diphtheria — the toxic agent — a tox albumen — which not only depresses these centers, but the entire nervous system.

Is there any scientific fact in Vanguri's and Hoffman's ideas that neucleine is nature's antitoxin? Then strychnia not only arouses the paralyzed nervous system, but in so doing, in making cell nourishment more active, neucleine too, must be in greater abundance and conseqnently nature's antitoxin in greater quantity, should the antitoxic qualities of neucleine be established beyond question. Then will not strychnia not only tone up directly all the nervous system and in especially sustaining the *nervous system* that presides over the animal life, but indirectly aid in sustaining the largest per cent possible of *neucleine*, nature's most efficient foe to infectious diseases?

The principle will be equally applicable in typhoid and other infectious fevers as in diphtheria, etc.

In narcosis from anæsthetics, chloral, the bromides, opium,

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alcohol, coal tar preparations and all agents that have seriously depressed these important centers that superintend the organs that are necessary to the preservation of life, strychnia is one of the great antagonists to their detrimental influence, and should be administered hypodermically — either the sulphate or the nitrate in from 1-20 to 1-10 of a grain and repeated as indications demand.

When we come to consider the multitudinous diseases of the nervous system in which strychnia is applicable, the time allotted a single paper alone would be wholly inadequate. However, a few principles may be considered that would aid us in its therapeutical uses. The construction of the mechanism of the nervous system is not materially different from any other part of the system. Each ganglia, or center of nerve force, consists of cells suspended in spaces in which they are bathed with fluid derived from the arterial side of the circulatory system poured out through the capillaries and by them too, is fluid removed, but carried away by the venous side, and this process of carrying to and from is largely under the control of the very cells that may be interfered with in their nutrition. It therefore becomes highly important that the nourishment of these cells be sustained.

It may be whip and spur must needs be applied in all depressed conditions of the nervous system. To meet this condition nothing fulfills the indication as does strychnia.

In all conditions, except where there is destruction of cells in the ganglionic centers, or where there is a destruction of a transverse section of a fibre, or of a number of them, or of the conducting tissue, we may expect more or less positive results for a time, if not permanently. The amount required or borne in some diseases is surprisingly large, as in infantile paralysis. To a child five years of age, I have administered gr. 1-20 four times in twenty-four hours for several days with only the best results. The child alluded to was so completely paralyzed that the superior and inferior extremities were paralyzed and respiration was so involved that suffocation seemed imminent. After twenty-four hours improvement was slow but sure.

Progressive muscular atrophy sometimes can be held in abeyance or improved for a time at least. In this difficulty arsenious acid makes an improvement.

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In syphilitic paresis much aid can be secured by strychnia. Any territory whose nerve supply has been cut off by destructive gummata of the cord or brain of course cannot be benefited.

I would like to specially say a word in behalf of its use in all *passive hemorrhages* from whatever part of the body. Whether from a tooth, stomach, lungs, bowels, uterus, kidneys or bladder, or even purpura hemorrhagica, I have had better results when it has been used than when not. I have more faith in it than in ergot. In post partum hemorrhage it should not be neglected hypodermically in good sized doses 1-20 to 1-10 of a grain, repeated as needed. It should be used hypodermically.

In all acute fevers, when their fury is well spent, or when they were weak and depressed in the commencement, then strychnia should be used. In chronic malaria 1-20 grain three times daily with iron, arsenic and quinia has never with me failed to prevent the seven-day recurrence after quinia has been given to temporarily arrest the paroxysms.

In kidney disease, where the elimination of water *per via* the glomerruli is deficient, due to venous stasis, strychnia will aid.

Its utility in shock, where there is in the early stage a spasmodic condition of the arterioles, then to administer it would be an error. It is not wise to cause a heart that is depressed to waste its energies against an unyielding column of blood. *First.* We should unlock the resistance with the nitrites in some form. *Second.* Not delay too long when vaso-motor tension seems to commence to flag, or heart and respiratory centers do the same.

DISCUSSION.

DR. FINLAYSON: This is one of the very best papers I have heard since I have been here. It brings to my mind a great many interesting experiences in the past, and one of recent date. Not long ago, following a surgical operation, a patient of mine began to sink, the heart became weak, great prostration following, and everything pointed to dissolution. At once I applied hypodermically nitrate of strychnia down to the 1-15 of a grain, at first every hour, and continued the administration of strychnia until the patient rallied and revived. The patient improved gradually, but during my absence, again sank and went into a state of coma and collapse,

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and the family lost faith in the treatment, and stood by very much alarmed, and on my return I began the administration of strychnine, and continued it for a period of one week, and the patient finally made a full recovery. I have tried several remedies, but the strychnine was the great force which held that patient's heart in its motion. Strychnine acts upon the medulla oblongata, the centers of circulation and respiration.

In anæsthesia you are aware every function of life is paralyzed but two. The dream of ages before 1847, when Professor Simpson introduced chloroform in dental operations, had been that persons might be put to sleep and surgical operations performed. In that year the dream was fulfilled, and the cardiac centers, and the respiratory centers still performed their functions. Those two centers are principally the two centers that strychnine acts upon.

It has been my habit of late years in cases of weak persons, and persons who do not take anæsthesia kindly, it has been my habit I say to give them nitrate of strychnine, and universally I find it of great advantage, as it carries my patient through the period of anæsthesia with a strong heart and strong respiratory function.

Not long ago I injected a frog with nitrate of strychnine, then I guillotined him, and also guillotined a partner frog with no strychnine. The frog that had his skin full of strychnine when touched with a steel fork responded, his legs flying about, while the other frog that had no strychnine did not respond at all. Of course this experiment must be performed immediately after death.

Of course the brain was not acting — it was purely the spinal cord reflex ; but the experiment proved how strongly strychnine acts upon the spinal cord, as well as primarily upon the medulla oblongata.

DR. JENKINS : I have been greatly interested in some of the points in this paper, especially to the importance attached to these strong therapeutic agents,— a subject we are all interested in. There are only a few leading strong remedies that are used by most physicians, and strychnine is one of them that has not been used enough. Most physicians do not understand the therapeutic effects of the drug, but it is being taught more thoroughly now, and is being more generally used by the leading physicians. I was very much interested in the paper because I have had occasion to verify

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many of the therapeutic effects so thoroughly explained, with regard to how they are brought about through the medium of the centers, principally those of the medulla oblongata. I have been somewhat in the habit of relying upon strychnia in a certain class of cases — not simply in pneumonia, but in typhoid fever, and I can recall a number of cases of fever and other troubles where I feel sure that I have saved life by the use of strychnine, and in addition to that nitro-glycerine.

Now, while these remedies are to a certain extent antagonistic, you will find cases where by their use you will save life where you would inevitably lose it without the use of these remedies. In one case of typhoid fever I had, the young man had a very severe attack, running for about twenty-three or twenty-four days. I had been watching him carefully, and visited him two or three times per day, and had been using the usual remedies, using carbolic acid, and iodine, which are very good remedies for disinfection, although some others may be as good — anyhow I went to see him this morning. I had been giving 1-20 grain every four hours,— and when I got there he seemed to be sinking, though given a good deal of whiskey. When I went there the sisters at the hospital thought he was dying. I went into the room, and sure enough he was looking cyanotic. There was a tremor, with a peculiar fluttering of the pulse, which was recording 140, and a failure of respiration, as well as circulation. I was not giving enough. I immediately took out my hypodermic syringe — the other physician thought he was going to die,— and I injected two 1-20 grain tablets of strychnia hypodermically, and directed that another 1-20 grain be injected in the course of half an hour if he did not rally. He began to get better respiration, and better circulation, and he got well, of course with proper nutrition. I feel in this drug we have one of the most potent and important therapeutic agents, which will often save a life, and feel that it ought to be impressed upon the minds of physicians sufficiently so that they will go home and use it.

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IN MEMORIAM — CHARLES H. PINNEY, M. D.

By Rebecca Hanna, M. D.

CHARLES H. PINNEY was born August 30, 1842, in Elyria, Lorain county, Ohio. His great grandfather, John Pinney, came from Scotland long before the revolution and fought in the war for independence. Dr. Pinney was the fourth child of Hurlbert Pinney, of Hartford, Connecticut, and Malina Abby, of the state of New York. Two sisters and three brothers are still living: Carrie M., wife of Hon. R. Y. Horr, late of Michigan; Laura M., wife of Rev. S. Alexander, of Kansas; Allen W., a fruit grower near Council Bluffs, Iowa; and next in order of birth the subject of our sketch; Anson E., a hardware merchant in Ithica, Michigan; and John H., farmer near Ithica, Michigan.

Dr. Pinney was brought up on the farm where he was born, until he was fourteen years old when he went to live with an uncle, Dr. Abby, of Clarkson, Michigan, with whom he began the study of medicine. His literary education was obtained in the Clarkson academy and scientific department of the University of Michigan, where he graduated. He then entered the medical department of the Michigan University and took his degree in 1864. He immediately after, when just past twenty-one years of age, entered the army as a surgeon in the Ninth Ohio cavalry, joining his regiment at Decatur, Alabama, and served until the close of the war. (This regiment was engaged in many hard fought battles, first with Chalmer's and Wheeler's cavalry, then did scouting duty. It was next transferred to General Rosseau's command, then with General Sherman to the sea and back through the Carolinas and finally it participated in the very last battle of the war east of the Mississippi on Hope Creek, near Chapel Hill, North Carolina, after the surrender of Gen. Joseph E. Johnson. Then Dr. Pinney's regiment was retained in the south to aid in the reconstruction of the state.) He was mustered out of the service September, 1865.

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The same fall he went to Philadelphia and continued his medical studies, and graduated from the University of Pennsylvania in 1866.

Dr. Pinney commenced the practice of medicine in Omaha, Nebraska, in March 1866. He built up a good practice and held various positions of trust, among them the office of coroner. He was married September 15, 1870, to Miss Ella J. Pusey, daughter of Hon. W. H. M. Pusey, of Council Bluffs. She was born in Pittsburgh, Pennsylvania. They had born unto them three sons and a daughter: Hurlbert H., Lucile K., and Frank D. Their eldest son, William Henry, died at the age of four and a half years.

Dr. Pinney located in Council Bluffs, Iowa, in 1875, in compliance with his wife's desire, where he was very sucessful in his chosen profession.

He was medical examiner and referee for the Mutual Life Insurance Company, of New York, since 1880, also local surgeon of the Union Pacific Railroad — resigned, and at the time of his death he was local surgeon of the Rock Island Railroad. He held the position fourteen years. He was a member of the Council Bluffs Medical Society, at one time being its president, a member of the Iowa State Medical Society and a member of the Missouri Valley Medical Society.

He was professor of Practice of Medicine in the Council Bluffs Medical College and one of its trustees. He was an active member of the microscopical society, member of St. Andrew's Society at Council Bluffs and belonged to the Grand Army of the Republic. He was a Mason when a resident of Omaha but later became ancient.

He was a staunch republican but not an active politician. Socially he made hosts of friends and was generous to a fault. He gave liberally to all religious denominations; in belief he was a Unitarian, or more strictly speaking, a deist in the true meaning of that term. His advice to all was do right for right's sake. He saw an Almighty Power in every thing, God was everywhere with him — in every flower and blade of grass.

Dr. Pinney was extensively interested in stock-raising and fruit growing — he was a member of the Grape Growers' Shipping Association.

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Dr. Pinney lost his life in a wreck near Lincoln, Neb., on the Rock Island Railroad. He left his home at noon, August 9, 1894, for Nebraska to purchase grain for his stock. Grain merchants near Lincoln told him there was no corn in the country and he started home on the ill-fated train.

His friend, Rev. T. W. Crofts, of Beatrice, Neb., says:

The wreckage of the awful disaster passed through our city two weeks ago, and I secured a piece of iron as a memento and had it gilded and adorned with forget-me-nots. It is beautiful and very significant of the memory of one I truly loved.

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Adams, J. W.	Des Moines	Rush Medical	
Allen, C. W.	Story City	University of Vermont	1882
Amos, A. R.*	Des Moines	Rush Medical	1882
Anderson, A. A.	Des Moines	Rush Medical	1882
Applegate, A. J.	Indianola	Physicians and Surg., Keokuk	1864
Appleby, G. W.	Bristow	Chicago Medical	1885
Ashby, A. A.*	Red Oak	State University of Iowa	1894
Atkinson, Clara E.	Des Moines	State University of Iowa	1876
Avery, Milo	Aurelia	Rush Medical	1884
Ayres, Ed. C.*	Glenwood	Starling Medical College	1875
Baker, E. L	Indianola	Louisville Medical	1873
Baker, L. J.	Ottumwa	Jefferson	1875
Bailey, S.*	Mt. Ayr	Rush Medical	1879
Ballah, W. J.	Washta	Detroit Medical College	1884
Barfoot, A. F.	Decorah	Med. Dept. Iowa State Univ. Jefferson Medical	1886 1887
Barnes, H. E. W.*	Creston	State University of Iowa	1873
Barr, G. Walter.*	Keokuk	Jefferson Medical	1884
Barringer, J. C.	Oskaloosa	Starling Medical College	1873
Batchelder, F. P.	Lyons	Rush Medical	1881
Beam, W. W.	Rolfe	State University of Iowa	1886
Beane, J. V.	Fairfield	Bellevue Hospital	1868
Beck, J. W.	Des Moines	State University of Iowa	1881
Beggs, George W.	Sioux City	Rush Medical	1862

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Bergen, A. C.	Sioux City	Long Island Hospital	1879
Berry, A. K.	Chillicothe	State University of Iowa	1884
Berry, R. P.	Clermont	McGill University, Montreal	1888
Bertram, William	Keokuk	Berlin, Prussia	1849
Bice, D. C.	Des Moines		
Bierring, W. L.*	Iowa City	State University of Iowa	1892
Bigelow, I. S.	Dubuque	Rush Medical	1881
Biller, J. G.	Cherokee	Detroit Medical	1884
Bogan, W. L.*	Hamburg	College Phys. and Surg., Keokuk.	1872
Bone, H. C.*	Grand River	Marion Sims, St. Louis	1890
Boot, G. W.	Spencer	Sioux City Medical, Iowa	1893
Bosbyshell, C. B.	Glenwood	Jefferson Medical	1854
Bowen, A. B	Maquoketa	Albany Medical	1868
Bower, E. L.	Guthrie Centre	University of Michigan	1886
Bradley, C. C.	Manchester	Bellevue Hospital	1867
Brainard, Dudley S.	Stacyville	University of Buffalo	1875
Branson, Laura H.	West Branch	State University of Iowa	1885
Braunworth, J. S.*	Muscatine	State University of Iowa	1876
Brockman, D. C.	Ottumwa	State University of Iowa	1878
Brooks, A. L.	Audubon	Rush Medical	1883
Brookings, D. J.	Woodward	Rush Medical	1869
Brown, C.	Sac City	Physicians and Surg., Keokuk	1877
Bryant, C. H.*	Corning	State University of Iowa	1891
Bulis, H. C.	Decorah	Vermont Medical Jefferson Medical	1854 1888
Bundy, W. C.	Aurelia	Physicians and Surg., Chicago	1885
Burbank, Oscar	Waverly	Medical Department, Harvard	1848
Burch, G. W.	Burlington	Physicians and Surg., Keokuk	1890
Burt, C. I.	Lake City.	Physicians and Surg., Keokuk	1887
Caldwell, J. T.	Adel	Physicians and Surg., Keokuk	1863
Campbell, C. L.*	Lewis	Miami Medical	1881
Campbell, E. T.*	Tabor	Columbian University, Wash	1888
Cannon, Joseph	Des Moines	Phys. and Surg., Des Moines	1892
Cantwell, A. W.	Davenport	University of Michigan	1869
Carder, J. D.	Iowa City.	Long Island Hospital	1876
Carl, F. F.	Nichols	State University of Iowa	1886
Carhart, G. L.	Marion	Albany Medical	1848
Carrothers, F. S.	Des Moines	Woman's Medical, Chicago	1885
Carroll, J. M.	Laurens	State University of Iowa	1879
Chamberlain, H. D.	Nevada	University of Michigan	1876
Chapman, R. R.*	Bridgewater	Rush Medical	1894
Chappell, Geo. M.	Des Moines	Iowa College Phys. and Surg	1890
Chapman, R. U.*	Des Moines	Iowa College Phys. and Surg	1892
Charlton, J. B.	Clear Lake	State University of Iowa	1872
Chase, C. S.*	Waterloo	Rush Medical	1882
Chase, L. C.	Cedar Falls		
Christy, W. D.*	Shannon City	Starling Medical College	1878
Clapp, E. F.	Iowa City.	Bellevue Hospital Med. College	1872
Clarke, Edward F.	Rockwell Junct.	Rush Medical	1891
Clarke, J. Fred.	Fairfield	University of Pennsylvania	1889
Clark, E. W.	Grinnell	Rush Medical	1871
Clark, R. D.	Akron	Rush Medical	1875
Clark, S. W.	Oskaloosa	State University of Iowa.	1886
Claybaugh, J. P.*	Creston	Rush Medical	1883
Claybaugh, W. W.	Dexter	Rush Medical	1883
Cleaves, R. L.	Cherokee	Harvard Medical	1869
Coad, N. G. O.	Hull.	University of Vermont	1887
Coakley, J W.*	Mt. Ætna	Barnes College	1893
Cobb, E. A.	Harlan	Charity Hospital, Medical	1868
Coggswell, F. A.	Swaledale	State University of Iowa	1889

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Cokenower, H. L.*	Clarinda	College Phys. and Surg., Keokuk	1877
Cokenower, J. W.*	Des Moines	Louisville Medical	1880
Cole, D. L.	Bussey	Physicians and Surg., Keokuk	1881
Cole, J. F.	Oelwein	State University of Iowa	1887
Cole, T. C.	Thurman	College Phys. and Surg., Keokuk.	1878
Conn, C. E.*	Battle Creek	State University of Iowa	1895
Conn, J. E.*	Ida Grove	State University of Iowa	1892
Conniff, R. E	Sioux City	State University of Iowa	1884
Cooling, A A.	Wilton	Miami Medical	1872
Cottle, C. C.	Marshalltown	Rush Medical	1889
Coulter, J. H.	Summitville	Physicians and Surg., Keokuk	1890
Coveny, J. T.	Pekay	Collge Phys. and Surg. St. Joe, Mo.	1882
Cowger, E. F.	Riverton	Physicians and Surg., Keokuk	1880
Cox, J. B.	Belle Plaine		
Craig, J. H.	Rockdale	Rush Medical	1875
Crawford, G. E.	Cedar Rapids	Bellevue Hospital	1879
Crawford, J. P.	Davenport	State University of Iowa	1883
Cresap, Roger N.*	Bonaparte	Kansas City College	1885
Criley, B. H.	Dallas Center	Jefferson Medical	1871
Crosby, I. F.	Menlo	Physicians and Surg., Chicago	1889
Crouse, D. W.*	Waterloo	Long Island Medical	1869
Crouse, Eugene A.	Grundy Center	University of Pennsylvania	1870
Culverson, F. P.*	Greenfield	College Phys. and Surg., Keokuk.	1880
Cushman, R. A.	Sanborn	Dartmouth Medical	1882
Cutler, F. H.	Bancroft	Chicago Medical	1882
Dalbey, James W.	Cedar Rapids	Physicians and Surg., New York	1888
Davis, W. H.	Maquoketa	Jefferson Medical	1861
Dean, H. M.	Muscatine	Physicians and Surg., New York	1861
Deering, A. A.	Boone	Maine Medical	1868
De Lano, A. H.	Lone Tree	State University of Iowa	1887
Dempsey, P. J.	Cascade	Chicago Medical	1885
De Tarr, D. N.	Boone	University of Michigan	1880
Devine, James H.	Sioux Rapids	Physicians and Surg., Keokuk Bellevue Hospital Med., N. Y.	1879 1883
Dewey, W. F.	Moville	Medical Dept. Iowa State Univ.	1884
De Witt, C. H.*	Glenwood	Physicians and Surg., Chicago	1883
Diehl, C. E.	Valley Junction	State University of Iowa	1893
Dixon, J. W.	Burlington	Trinity and Queen's Univ., Can.	1890
Doolittle, J. C	Independence	Rush Medical	1887
Dorr, Ed. E.*	Des Moines	State University of Iowa	1889
Dorsey, F. B.*	Keokuk	Physicians and Surg., Keokuk	1881
Dosh, G. W.	Brighton	Rush Medical	1879
Doty, E. A.	Oxford	State Univerity of Iowa	1885
Druneler, C. M.	Panora	St. Louis Medical	1876
Dudley, E.	Paullina	Rush Medical	1886
Duncan, M. J.	Pleasantville	Keokuk Medical	1892
Dunkelberg, E. E.*	Frederica	State University of Iowa	1886
Dunkelberg, R. A.	Denver	University of Michigan	1880
Eiskamp, G. H.*	Washington	Physicians and Surg., Keokuk	1892
Embree, Ed.*	Winterset	State University of Iowa	1889
Emery, H. G.	Des Moines	University of Michigan	1889
Emmert, J. M.*	Atlantic	Jefferson Medical	1872
Enfield, Charles.	Jefferson	Physicians and Surg., New York	1869
Ensign, H. D.	Boone	Chicago Medical	1875
Eschbaugh, H. E.*	Albia	University of Pennsylvaina	1883
Evans, O. E.	Gowrie	Physicians and Surg., Keokuk	1879
Evans, R.	Ft. Dodge	Detroit Medical	1888
Ewers, H. F.*	Burlington	Castleton	1853
Failor, Benj. M.	Newton	Jefferson Medical	1855
Fairchild, D. S.*	Clinton	Albany Medical	1868

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Farnsworth, D. W.	Galva		
Farnsworth, P. J.	Clinton	Physicians and Surg., New York	1860
Farr, H. S.	Madrid	State University of Iowa	1881
Farrens, E. T.*	Clarinda	Missouri Med. College, St. Louis.	1881
Fellows, E. D.	Valley Junction	Keokuk Medical	1892
Ferguson, J. W.	Ottumwa	Physicians and Surg., Keokuk	1880
Field, A. G.*	Des Moines		
Finch, H. C.	Lynnville	Medical College of Indiana	1881
Finlayson, D. W.*	Des Moines	University of Michigan	1875
Fleming, J. C.	Burlington	Jefferson	1871
Fordyce, Oscar	Guthrie Center.	Physicians and Surg., Chicago.	1885
Fordyce, W.*	Fairfield	College Phys. and Surg., Keokuk.	1875
Foxworthy, O. W.	Weldon	Physicians and Surg., Keokuk	1884
Frederick, Mary D.	Des Moines	Physicians and Surg., Keokuk	1884
French, L.	Davenport	Berkshire Medical	1853
Frizelle, C. H.	Viele	State University of Iowa	1886
Fuller, Geo. H.	Delhi	Chicago Medical	1869
Fullerton, O. J.	Waterloo.	State University of Iowa	1886
Fullerton, P. J.	Raymond	University of Michigan	1879
Garfield, L. K.*	Algona.	College Phys. and Surg., Keokuk.	1878
Getz, H. L.*	Marshalltown	Jefferson Medical	1877
Gibbons, John A.*	Keokuk	College Phys. and Surg. Keokuk.	1883
Giest, Geo. F.	Danville	Jefferson Medical	1877
Gilman, H. A.	Mt. Pleasant	Dartmouth Medical	1866
Gorrell, J. R.	Newton	University of Buffalo	1860
Gould-Fosnes, Edith.	Des Moines	Woman's Medical, Philadelphia.	1878
Graham, C. C.	Baxter	State University of Iowa	1884
Graham, W. F.*	Atlantic	Rush Medical	1880
Graves, D.*	Gilman	University of New York	1871
Greene, Joel H.*	Dubuque	Buffalo	1875
Gregory, R. H.*	Nevinville	Kentucky School of Medicine	1893
Griffin, C. C.	Vinton	University of Michigan	1868
Grigg, R. C.*	Murray	Rush Medical	1871
Grimmell, G. H.	Jefferson	Physicians and Surg., Keokuk	1874
Grimes, W. S.*	Wapello	Rush Medical	1874
Grossman, D. S.	Minburn	University of Pennsylvania	1877
Groves, L. S.*	Creston	Ohio Medical	1859
Groves, A. I.*	Creston	State University of Iowa	1889
Guthrie, J. R.	Dubuque	State University of Iowa	1884
Hackett, C. J	Le Mars	University of New York	1861
Hagebeck, A. L.	Davenport	State University of Iowa	1883
Hale, W. W.	Des Moines	Physicians and Surg., Keokuk	1877
Hamilton, C. H.	Dubuque	Rush Medical	1873
Hanawalt, G. P.	Des Moines	Georgetown Univ., D. C	1864
Hanna, Rebecca*	Red Oak	State University of Iowa	1874
Harp, J. F.	Prairie City	State University of Iowa	1884
Harriman, O. B.	Hampton	Dartmouth Medical	1860
Hasty, J. F.*	Murray	State University of Iowa	1889
Hathaway, L. B.	Reinbeck	Rush Medical	1877
Hatton, J. B.	Des Moines	Physicians and Surg., Keokuk	1871
Hazen, E. H.*	Des Moines	Charity Hospital Medical	1866
Heilman, E. C.	Ida Grove	Ohio Medical	1877
Henry, C. W.	Coon Rapids	Rush Medical	1884
Herrick, J. F.*	Ottumwa	Keokuk Medical	1891
Hess, Elizabeth	Iowa City	State University of Iowa	1874
Hester, F. E. L.*	Glenwood	Missouri Medical	1883
Hewitt, S. R.	Charles City	Rush Medical	1867
Hibbs, G. B.*	Mitchellville	Physicians and Surg., Chicago	1889
Hiett, F. M.*	Red Oak	Rush Medical	1865
Hill, Gershom H.*	Independence	Rush Medical	1874

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Hill, M. W.	Iowa Falls	Physicians and Surg., Keokuk	1881
Hill, Nancy M.	Dubuque	University of Michigan	1874
Hillis, D. B.*	Keokuk	St. Louis Medical	1847
Hills, Sarah S.	Stuart	University of Michigan	1876
Hinshaw, Wm.	Dallas Center	Phys. and Surgeons, Keokuk	1874
Hobby, C. M.*	Iowa City	Bellevue Hospital Medical	1870
Hobson, A. J.	Hampton	State University of Iowa	1884
Hœring, G. P.*	Walnut	State University of Iowa	1888
Hoff, A. W.	Des Moines	Ia. Col. Phys. and Sur. Des M.	1886
Hoffman, D. A.	Oskaloosa	Western Reserve Medical	1848
Hoffman, R. C.	Oskaloosa	Jefferson Medical	1883
Holland, J. E.	Mt. Pleasant	Bellevue	1890
Holland, J. W.	Osceola	University of Iowa	1874
Holliday, J. W.	Burlington	Phys. and Sur., Keokuk	1869
Hooper, M. L.*	Milo	College Phys. and Surg., Keokuk	1891
Hornibrook, E.*	Cherokee	University of Victoria, Canada	1861
Hostetter, J. I.	Colo	Chicago Medical	1880
Howe, J. E.*	Greenfield	College Phys. and Surg., Keokuk.	1873
Howe, W. S.	Hawarden	Bellevue Hospital Medical	1882
Hoyt, Frank C.*	Clarinda	University of Louisville	1881
Hugg, A. A.	Oskaloosa	Jefferson	1882
Hughes, J. C.*	Keokuk	Phys. and Surg., Keokuk	1871
Hull, A. G.*	Des Moines	State University of Iowa	1890
Hunter, H. E.	Newton	Western Reserve Medical	1869
Hutchins, J. H.	Hampton	Rush Medical University of New York City	1871 1881
Hutchinson, Woods*	Des Moines	University of Michigan	1884
Ingells, J. B.	Meriden	Bellevue Hospital Medical	1878
Irish, H. R.	Forest City	State University of Iowa	1883
Jackman, Fred O.*	Mt. Pleasant	Chicago Medical	1887
Jackson, D.	Pleasantville	Kentucky Medical College	1865
James, Chas. H.*	Centerville	State University of Iowa	1891
Jenkins, E. R.	Washington	Missouri Medical, St. Louis	1866
Jenkins, Geo. F.*	Keokuk	Missouri Medical, St. Louis	1866
Jepson, Wilhelm	Sioux City	State University of Iowa	1886
Jewell, P. M.	Ossian	University of Michigan	1873
Jones, N. Jasper	Shelby	State University of Iowa	1883
Jones, U. C.	Breda	Ia. Col. Phys. and. Surg., Des M.	1885
Jones, Geo. N.	Burlington	McGill University, Montreal	1874
Jonsson, C.	Clinton	College of Iceland	1888
Joor, Peter	Maxwell	State University of Iowa	1881
Joraleman, J. C.	Toledo	Rush Medical	1877
Keables, H. F.	Des Moines	University of Pennsylvania	1877
Kelleher, T. F.	Des Moines	State University of Iowa	1878
Kemper, J. F.*	West Burl'gton	Phys. and Surg., Keokuk	1885
Kenefick, M. J.	Algona	Rush Medical	1892
Kennedy, J. F*	Des Moines	University of New York City	1848
Kessell, Geo.	Cresco	Rush Medical	1885
Kessler, A.*	Carroll	Hospital College Medical, Ky.	1888
Kessler, J. B.	Iowa City	State University of Iowa Bellevue Hospital Medical	1877 1883
Kime, J. W.*	Ft. Dodge	State University of Iowa	1883
King, A. E.*	Blockton	Coll. Phys. and Surg., Keokuk Hospital College, Louisville	1881 1894
King, Azuba D.	Des Moines	State University of Iowa	1876
King, E. H.	Muscatine	Detroit Medical	1870
Kinnier, W. H.	Dubuque	Albany Medical	1870
Kirkendall, E. E.	West Burl'gton	State University of Iowa	1885
Knott, T. B.	Sioux City	Columbia University	1893
Krejci, J. C.	Sioux City	Vienna, Austria	1862

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NAME.	ADDRESS.	COLLEGE.	CLASS
Kulp, J. H.	Davenport	State University of Iowa	1872
Lacey, T. B.	Council Bluffs	Chicago Medical	1875
Ladd, J. A.	Traer	Phys. and Surg., Keokuk	1856
La Force, W. B.	Ottumwa	Chicago Medical	1891
La Force, D. A.	Ottumwa	Col. Phys. and Surg., Keokuk	1863
La Grange, J. W.	Marion	Rush Medical	1875
Lakin, A. M.	Yale	Rush Medical	1884
Lander, J. W.*	Afton	State University of Iowa	1874
Latta, W. J.	Des Moines	Chicago Medical	1881
Layton, H. R	Leon	Phys. and Surg., Keokuk	1876
Leech, C. A.*	Keokuk	Phys. and Surg., Keokuk	1876
Leipziger, H. A.*	Burlington	Bellevue Medical	1881
Leith, A. R.	Wilton	State University of Iowa	1882
Le Roy, H. C.	Des Moines	University, Victoria	1857
Lewellen, P. W.	Clarinda	Ohio Medical	1865
Lewis, C. G.	Ottumwa	Phys. and Surg. Keokuk	1850
Lewis, John S.	Dubuque	Jefferson Medical	1868
Lewis, J. R.	Grinnell	Bellevue Hospital Medical	1885
Limbeck, D. W.	Mediapolis	Starling, Maine	1879
Little, Geo. B.	Burlington	St. Louis Medical	1885
Littig, L. W.	Iowa City	State University of Iowa	1883
		University of Pennsylvania	1884
		Royal Col. of Surg., England	1887
Little, F. H.	Muscatine	State University of Iowa	1879
Lloyd, F. W.	Merservey	Kentucky School of Medicine	
Louthan, B. S.	Sutherland	State University of Iowa	1873
Love, J. S.	Springville	Jefferson Medical	1856
Love Lady, J. M.	Hamburg	Missouri Medical	1887
Lowry, O. W.	Grand Junction	Phys. and Surg., Keokuk	1873
Lukens, C. J.*	Oskaloosa	Missouri Medical College	1881
Lumbeck, C. W.	Mediapolis		
Lytle, S. S.	Iowa City	State University of Iowa	1878
Lynch, H. G.*	Arbor Hill	Columbus Medical	1878
Macrae, Donald*	Council Bluffs	Edinburg, Scotland	1861
Macrae, D., Jr.*	Council Bluffs	University of Michigan	1891
Marsh, C. F.	Mt. Pleasant	University of Michigan	1869
Mason, Kate A.	Mt. Vernon	Woman's Medical, Chicago	1885
Mason, R. D*	Missouri Valley	State University of Iowa	1887
Mauran, A. J.*	Creston	College Phys. and Surg., N. Y.	1854
Maxwell, Thos. J.*	Keokuk	Phys. and Surg., Keokuk	1861
McAllaster, B.*	Lamoni	State University of Iowa	1894
McAllister, Charles	Spencer	Berkshire Med. Massachusetts	1865
McCarthy, J. F.	Dubuque	Minneapolis Hospital	1883
McCaw, W. H	Swedesburgh	Phys. and Surg., Keokuk	1878
McCleary, H. C.*	Indianola	Rush Medical	1881
McCleary, J. D.	Indianola	Phys and Surg., Keokuk	1867
McClees, C. H.	Marne	State University of Iowa	1881
McClure, A. W.	Mt. Pleasant	University of Pennsylvania	1860
McClure, R. A.	Van Meter	Chicago Medical	1894
McClure, T. G.	Douds	Phys. and Surg., Keokuk	1878
McConnaughey, D.S.	Washington	Phys. and Surg., Keokuk	1867
McCowen, Jennie	Davenport	State University of Iowa	1876
McCulloch, Geo.	Humeston	Rush Medical College	1873
McCune, J. H.	Kirkville	Rush Medical	1874
McDowell, G. F.	Clear Lake	University of Michigan	1869
McGavren, C W.*	Missouri Valley	Rush Medical	1879
McGorrisk, E. J.	Des Moines	St. Louis University	1856
McKitterick, N.*	Burlington	Rush Medical	1880
McKlveen, H. B.*	Coin	Physicians and Surg., Chicago	1890
McLain, W. H.	Beaman	Chicago Medical	1878

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NAME.	ADDRESS.	COLLEGE.	CLASS.
McLean, J. W.	Fayette	Rush Medical	1869
McMackin, W. W.	Lake City	Missouri Medical College	1880
McMorris, J.	Belle Plaine	University of Michigan	1864
McNaughton, M. N.*	Villisca	Buffalo, New York	1868
McVay, J. D.	Lake City	Physicians and Surg., Keokuk	1873
Mehler, F. C.*	New London	Rush Medical	1863
Meredith, M.	Vinton	Ohio Medical	1866
Middleton, W. D.*	Davenport	Bellevue Hospital	1868
Milholland, John	Winterset	Cincinnati College Med. and Sur.	1874
Minges, Geo.	Dubuque	Bellevue Hospital	1874
Miller, E. C.	Rockwell	Chicago Medical	1874
Miser, H. W.	Lovilla	Physicians and Surg., Keokuk	1864
Moon, A. C.	Williamsburg	State University Iowa	1884
Moorehead, S. W.	Keokuk	Physicians and Surg., Keokuk	1883
Morse, W. E. H.	Algona	University of Mich., Ann Arbor.	1885
Mueller, W. J.	Dyersville	Nancy, France	1868
Mulhern, T. W.*	Greenfield	College Phys. and Surg., Keokuk.	1882
Muller, J. A.	Dyersville	State University of Iowa	1891
Murphy, M. J.*	Cumberland	State University of Iowa	1885
Neff, G. R.	Farmington	State University of Iowa	1870
Nestor, R. J.	Hudson	State University of Iowa	1890
Neumann, P. C.	Burlington	State University of Iowa	1887
Newton, W. H.	Ft. Madison	Physicians and Surg., Keokuk	1890
Nicol, J. H.	Villisca	Physicians and Surg., Keokuk	1873
Noel, J. A.	Redfield	Missouri Medical, St. Louis	1886
Norton, H. M.*	Kent	Keokuk College	1874
Nossaman, A. J.*	Leighton	Keokuk Medical	1890
Noyes, James H.	Ogden	Physicians and Surgeons, N. Y.	1860
Nysewander, C.	Des Moines	Starling Medical	1879
Olive, A. L.*	Corning	College Phys. and Surg., Keokuk.	1882
Oliver, L. B.	Sigourney		
Ormiston, J. S.	Chelsea	State University of Iowa	1876
Overfield, E. E.*	Elma	State University of Iowa	1888
Overholt, D. W.	Columbus Junc.	Bellevue Hospital, Medical.	1872
Overholt, Jno. L.	Columbus Junc.	State University of Iowa	1887
Park, W. M.	Indianola	Physicians and Surg., Keokuk	1876
Paschal, C. M.*	Bedford	College Phys. and Surg., Keokuk.	1875
Patterson, M. F.	Des Moines	Cleveland Medical	1881
Patterson, I.	Oelwein	University of Buffalo	1867
Payne, Ira D.	Linden	State University of Iowa	1880
Pennington, B. S.	Kossuth	Keokuk Medical College	1891
Pierce, S. N.	Cedar Falls	Vermont Medical	1856
Pipino, W. C.*	Des Moines	University of Maryland	1873
Porterfield, E.	Spring Hill	Bellevue Hospital Medical	1883
Porterfield, W. F.*	Atlantic	Chicago Medical	1879
Potter, F. E.*	Corning	Kentucky School of Medicine	1882
Powell, C. B.*	Albia	Physicians and Surg., Keokuk	1882
Powell, F. M.*	Glenwood	Starling Medical	1875
Powers, F. W.	Reinbeck	State University of Iowa	1889
Powers, H. A.	Emmetsburgh	State University of Iowa	1882
Powers, J. L.	Reinbeck	Physicians and Surg., Keokuk	1876
Powers, M. J.	Iowa Falls	Pittsburg, Massachusetts	1865
Preston, C. H.	Davenport	State University of Iowa	1873
Priestley, J. T.*	Des Moines	University of Pennsylvania	1874
Rawls, J. W.*	Creston	Ohio Medical	1875
Rawson, A. A.*	Corning	Rush Medical College, Chicago	
Raymer, H. S.	Cedar Rapids	Physicians and Surg., Chicago	1885
Reynolds, A.	Clinton	University of Vermont	1864
Reynolds, J. D.*	Creston	Physicians and Surg., Keokuk	1872
		Rush Medical	1885

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Reynolds, E. M.	Centerville	Physicians and Surgeons	1879
Richards, W. O.	Waterloo	University of Michigan	1855
Riley, John	Exira	State University of Iowa	1880
Riordan, M. F.*	Melrose	State University of Iowa	1874
Ristine, H. G.	Ft. Dodge	Rush Medical	1869
Ristine, J. M.	Cedar Rapids	Bellevue Hospital, Medical	1873
Roberts, J.*	Osceola	Ohio Medical	1865
Roberts, T.	St. Charles	Physicians and Surg., Keokuk	1874
Robertson, J. C.*	Council Bluffs.	State University of Iowa	1873
		Bellevue Hospital Medical	1883
Robinson, S. E.	West Union	Rush Medical	1867
Rodgers, H. S.*	Red Oak		
Rood, L. D.	Des Moines	University of Vermont	1881
Roome, J. S.	Calmar	University of Michigan	1866
Rowe, G. D.	Boone	Bowdoin Medical, Maine	1868
Ruml, Wentzle	Cedar Rapids	Chicago Medical	1891
Ruth, C. E.*	Keokuk	State University of Iowa	1883
Sansom, J. E.	Tipton	Rush Medical	1878
Sampson, F. E.*	Creston	Rush Medical	1891
Saunders, C. J.	Ft. Dodge	Med. Dep. Iowa State University	1884
Saunders, C. W.	Manly	Rush Medical	1884
Savage, Jno. P.	Sioux City	Miami Medical	1878
Schmidt, F. E.	Muscatine	Keokuk Medical College	1891
Scott, Clifton	Des Moines	Kentucky School of Medicine	1883
Scott, E. C.	Maxwell	State University of Iowa	1880
Scott, Walter E.	Adel	Iowa College of Phys. and Surg.,	1891
Schifferle, Ed.*	Creston	Rush Medical	1884
Schooler, Lewis*	Des Moines	Kentucky School of Medicine	1878
Scroggs, J. A.*	Keokuk	Rush Medical	1873
Scroggs, J. P.*	Lenox	St. Louis Medical	1874
Sears, Reuben	Marshalltown	Rush Medical	1853
Seelye, W. K.	Cedar Falls		
Selby, R. W.*	Corning	Rush Medical	1883
Seymour, F. E.	Ft. Dodge	State University of Iowa	1879
Sherman, H. W.*	Lamoni	University of Michigan	1889
Sherman, W. B.	Manchester	Cleveland Medical	1870
Sherman, E. Am.	National	University of Michigan	1879
Sherwood, Thos.	Wilton	Miami Medical	1878
Shore, F. E. V.*	Des Moines	University of Michigan	1886
Shrader, J. C.	Iowa City	Physicians and Surg., Keokuk	1865
		Long Island Hospital Medical	1870
Sickler, Daniel	Ogden	Albany Medical College	1879
Sigworth, H. W.	Anamosa	Rush Medical	1863
Singleton, E. M.	Marshalltown	Chicago Medical	1891
Skinner, G. N.	Winterset	Iowa College of Phys. and Surg.	1889
Skinner, Geo. R.*	Cedar Rapids	Bellevue Hospital Medical	1866
Skinner, J. O.	Des Moines	Starling Medical	1850
		Physicians and Surg., Keokuk	1855
Sloan, M. G.	Dexter	Rush Medical	1873
Smead, C. C.	Knoxville	Rush Medical	1880
Small, W. B.	Waterloo	Chicago Medical	1890
Smith, C. W.	Muscatine	State University of Iowa	1875
Smith, F. C.	Nevada		
Smith, J. W.	Charles City	Yale Medical	1855
Smith, E. R.	Toledo	Rush Medical	1876
Smith, Irving W.	Ames	Jefferson Medical	1875
Smouse, D. W.*	Des Moines	University of Maryland	1876
Snook, C.	Fairfield	Physicians and Surg., Keokuk	1869
Sones, C. O.	Panora		
Spicer, S. S.	Blairstown	St. Louis Medical	1873

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Spilman, S. A.*	Ottumwa	Chicago Medical	1879
Stalford, Geo. A.	West Side	Iowa College Phys. and Surg.	1893
Stanton, T. P.*	Chariton	Rush Medical	1879
Stanton, J. E.	Chariton	Physicians and Surg., Keokuk	1872
Stevens, E, Luther.	Des Moines	Chicago Medical College	1892
Stevens, J. Scott.	Cedar Falls	Physicians and Surg., Chicago	1885
Stewart, Chas. W.*	Washington	Rush Medical	1891
Stitzell, Geo.	Nevada	Pennsylvania Medical	1858
Stockman, G. C.	Mason City	Rush Medical	1879
Stockslager, S. O.	Boone	Bellevue Hospital Medical	1874
Stoner, H. H.	Rock Rapids	St. Joseph Medical	1885
Stoner, Chas. E.	Des Moines	Physicians and Surg., Keokuk	1892
Stover, B. H.	Swaledale	Long Island Medical	1891
Strout, A. O.	Parkersburg		
Stults, M. F.	Wiota	Physicians and Surg. Keokuk	1878
Summers, N. P.	Van Meter	Columbus Medical	1887
Surber, L. H.	Indianola	Physicians and Surg., Keokuk	1877
Taintor, L. K.	Strawberry Point	Missouri Medical	1886
Talboy, J. H.	Sioux City	State University of Iowa	1884
Tedrow, J. B.	Williams	University of Michigan	1886
Thornton, J. H.	Lansing	Rush Medical	1879
Thomas, F. S.*	Council Bluffs	Physicians and Surg., Keokuk	1870
Thornburg, M. W.	Redfield	Bellevue Hospital Medical	1891
Townsend, D. J.	Lohrville	Ia. Coll. Phys. and Surg., D. M.	1887
Todd, W. A.	Chariton	Indiana Medical	1874
Torrey, B. N.*	Creston	St. Louis Medical	1873
Treynor, V. L.*	Council Bluffs	State University of Iowa	1891
Turner, A. B. L.	Colfax	Physicians and Surg., Keokuk	1884
Turner, L. C. S.	Colfax	Physicians and Surg., Keokuk	1882
Tuttle, Mary B.	Burlington	Women's Medical, Chicago	1888
Tyler, E. K.	Muscatine	State University of Iowa	1882
Vail, A. M.	Rock Rapids	Chicago Medical	1882
Vance, F. E	Eddyville	Rush Medical	1887
Van Werden, W.	Des Moines	Rush Medical	1884 1885
Wahrer, C. F.	Ft. Madison	Physicians and Surg., Keokuk	1882
Wallace, Chas. E.	New Sharon	Miami Medical	1885
Wallace, W. S.	Camanche	Physicians and Surg., Keokuk	1878
Wallace, J. E.	Belmond	Bellevue Hospital	1890
Waples, M. H.	Dubuque	Jefferson Medical	1865
Ward, G. B.	Fairbank	University of Michigan	1880
Waterman, J. C.*	Council Bluffs	Iowa College Phys. and Surg.	1886
Waters, P. J.	Redfield		
Watts, J. S	Millersburg	Jefferson Medical	1867
Watson, Wm.	Dubuque	Rush Medical	1854
Warnock, B. F.	Battle Creek	State University of Iowa	1881
Weaver, A.*	Cumberland	College Phys. and Surg., Keokuk	1892
Weismann, A.	Keokuk	Physicians and Surg., Keokuk	1864
Welch, Ira L.	Humboldt	Cleveland, Ohio	1879
Wells, Fred L.	Des Moines	Bellevue Hospital	1888
Wells, Jacob W.	Independence	Rush Medical	1891
Whiting, H. C.	Burlington		
Wick, D. M	Cedar Falls	Chicago Medical	1875
Will, F. J.	Eagle Grove	State University of Iowa	1883
Williams, R. R	Manning	Rush Medical	1879
Williams, J. C	What Cheer		
Williamson, F. A.	Hopkinton	Rush Medical	1886
Williamson, J.	Ottumwa	Western Reserve Medical, Ohio	1852
Wood, Irving C.	Logan	Jefferson Medical	1880
Woodworth, E. W.	Peoria	Physicians and Surg., Keokuk	1873

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NAME.	ADDRESS.	COLLEGE.	CLASS.
Worley, Joshua	Belle Plaine	Starling Medical	1874
Wray, J. H.	Des Moines	Jefferson Medical, Philadelphia	1877
Wright, A. L.	Carroll	Rush Medical	1874
Wright, J. C.	Clear Lake	State University of Iowa	1880
Young, H. B.*	Burlington	Chicago Medical	1875
Young, H. C.	Bloomfield	Keokuk Medical	1891

CORRESPONDING MEMBERS.

Grant, W. W.	Denver, Colorado
Hay, Walter	Chicago, Illinois
Holmes, G. W.	Tabríz, Persia
Steele, U.	Beloit, Kansas
Todd, J. F.	Chicago, Illinois

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INDEX.

	PAGE.
Address of Welcome — Mayor J. M. Scurr	1
Address on Behalf of Local Profession — H. E. W. Barnes	2
Annual Meeting, Proceedings of	1
Antiseptic Factor in the Treatment of the Acute General Infections, The — C. H. Lange	130
Attendance, Members in	3
Bassini Operation, The — W. D. Middleton	27
Committee on President's Address	5
Course and Diagnosis of Insanity, The — F. C. Hoyt	145
Diagnosis of Locomotor Ataxia from Optic Nerve Atrophy and Absence of Knee Jerk, The — H. B. Young	169
Diphtheria — J. P. Claybough	139
Direct Trituration in Ripening Immature Cataracts — W. C. Pipino	177
Discussion on Fracture of the Long Bones — H. E. W. Barnes	48
Endometritis — J. H. Van Eman	163
Ethics, Report of Committee	7
General Practice of Medicine, The — C. B. Powell	106
General Practitioner, The — Rebecca Hanna	85
History of Insanity — F. S. Thomas	141
In Memoriam — Rebecca Hanna	201
Intubation of the Larynx — D. W. Smouse	72
Iowa State Medical Society, Members of	203
Journal, Iowa Medical	16
Management of Ear Complications in Infectious Diseases — F. E. Sampson	180
Management of Tubercular Rectal Fistula — C. C. Allison	33
Membranous Croup and Diphtheria — Nosology — A. A. Rawson.	80
Modern Treatment of Diphtheria — W. L. Bierring	54
Myxœdema — T. J. Maxwell	123

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Obstructed Labor — A. A. Rawson 167
Officers Elected 10
Official Register 203

Pathology of Fracture of Long Bones — D. S. Fairchild 36
Physician, The — W. F. Stults 51
Permanent Members 203
Prognosis of Insanity — G. H. Hill 149

Rectal Stricture — C. E. Ruth 30
Report of Committee on Legislation 11
Report of Committee on Nominations 9
Report of Committee on Publication 16
Report of Finance Committee 14
Report on Gynæcology and Obstetrics — H. Landis Getz 158
Report on Ophthalmology and Otology — H. B. Young 169
Report on Practice of Medicine — F. M. Hiett 50
Report on State Medicine — J. S. Braunworth 186
Report on Surgery — J. M. Emmert 17

Scarlet Fever — A. B. Bowen 109
Secretary's Report 15
Senile Pneumonia — Geo. F. Jenkins 99
Strychnia — W. H. Christie 192

Treasurer's Report 15
Treatment of Compound Fractures — D. Macrae, Jr 42
Treatment of Diphtheria with Antitoxic Serum — F. W. Porterfield 61
Treatment of Epilepsy, The — T. P. Stanton 113
Treatment of Hernia, The — Lewis Schooler 23
Treatment of Insanity — Edward Hornibrook 152
Treatment of Pneumonia, On — P. J. Farnsworth 90
Two Cases of Diphtheritic Croup — S. A. Spillman 136

ERRATA. — Page 84, third line from top, read "the physician attending the child became frightened and told her he could not," etc.

Page 203, C. L. Stevens should read E. L. Stevens.

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